

The Buyer's Guide

Suppliers Specializing in Service to the
Refrigeration and Air Conditioning Industries

HARDY "Mayflower" Commercial Compressors

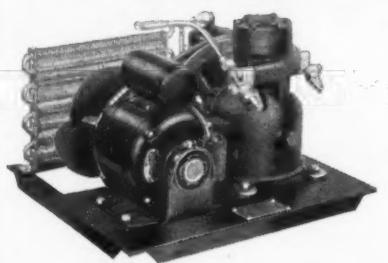
are products
of established Value

Reliably recommended
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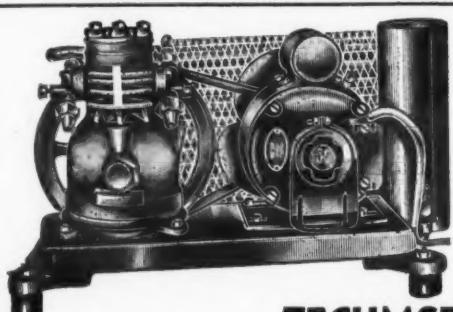
HARDY MANUFACTURING CO., Inc., 100 Davis Ave., Dayton, Ohio



CONDENSING UNITS and COMPRESSORS



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A SUBSIDIARY OF THE
JOHNSON MOTOR CO.
Waukegan, Ill.
CABLE ADDRESS: JOMOCO-WAUKEGAN



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QUALITY-BUILT
COMPRESSORS and
CONDENSING UNITS
All bearings diamond bored. Positive
lubrication of piston by newly de-
veloped process plus forced feed
lubrication in all models.
Sizes: 1/6, 1/5, 1/4, 1/3 h.p.
Write for prices
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PUR
ELECTRIC WATER COOLERS
Thoroughly reinforced all steel attractively
finished cabinets.
Complete line of different Models and Capacities.
Write for details and sales prices.
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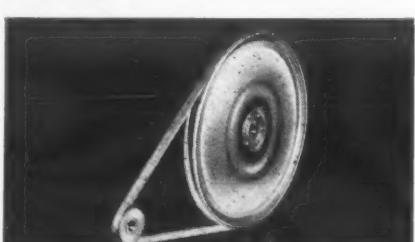
LEADING MAKERS OF REFRIGERATING AND
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Dayton V-BELTS

Because of their outstanding
advantages Dayton V-Belts have
been used as original equipment
on leading makes of air conditioning
equipment, electric refrigerators,
washing machines and other appliances
for many years.

Dayton V-Belts are the logical
choice because they provide
silent, dependable transmission—
because their powerful grip pre-
vents slippage—because they run
smoothly without weaving, twist-
ing or vibrating.

A nearby distributor carries a com-
plete stock of Dayton V-Belts at all



Whether for Fractional or a Thousand H.P. there is a
Dayton V-Belt Drive for the job.

times and can quickly supply you.
Write us for price list and complete
information.

THE DAYTON RUBBER MANUFACTURING CO. • DAYTON, OHIO
World's Largest Manufacturer of V-Belts

KASON
HARDWARE

→ Manufacturers of Fine Refrigerator Hardware ←

KASON HARDWARE CORP., 127-137 Wallabout St., Brooklyn, N.Y.



Service Company Uses Student Help And Charges for Instruction

Fred Asselmeyer, Jr.
435 22nd St., West New York, N.J.
March 13, 1936.

Gentlemen:

Received your letter of March 9, and I am anxiously awaiting the catalogues.

In reference to the Universal Ref. School, it is located at 350 Madison Ave., between 25th and 26th Sts., New York City. It is a trade school with a shop for compressor repairs, welding, dehydrator ovens, expansion valves, and pressurestat or thermostatic controls repairs and motor repairs. They have the students work on old and used boxes which are repaired and then repainted with Duco, new hardware and trays put on the boxes. It is not a home study course, but the actual repair and servicing of the box.

We have a Mr. Vanneman as engineer, Mr. Wm. Schroeder as our compressor etc., room instructor, Mr. Fred Cowan who takes care of new students, and Mr. Valentine who will be

with us on March 16 to take over the production line as we call the line where the boxes are repaired.

Every man mentioned above except Mr. Valentine whom I have not met as yet, has been a pleasure to work for and with.

The course when I started in October, 1935, was \$50.00 cash or \$55.00 instalment plan, and I do not think this price has changed. The course runs an indefinite time, that is to say you can come or go as you wish.

I have attended almost every night since I started except for three weeks around the Christmas holidays and have enjoyed going.

They carry almost all the important makes of refrigerators such as Kelvinator, Frigidaire, G-E, Mayflower, Electrolux, Starr Freeze, Jomoco, and install new units in Seeger boxes. They have three classes, one from 9 to 12, 1 to 4, and 7 to 10, with the night school only four nights a week.

Hoping this letter is of some help to you. FRED ASSELMEYER, JR.

on your Catalog Mailing List. Hoping you keep up the good work.—R. L. Leep, 2306 Kemper Lane, Cincinnati, Ohio.

Please enter my name on the catalogue mailing list which I understand you are compiling. This is a commendable service rendered to the independent service man.—Cohn's Radio Shop, 48 Jackson St., South River, N.J.

As a subscriber to the ELECTRIC REFRIGERATION NEWS and MASTER SERVICE MANUAL, I would like you to please place my name on your catalogue mailing list. Thanking you in advance.—Chris B. Kerner, Kerner Electric Refrigeration Service, 824 Henry Clay Ave., New Orleans, La.

Received my subscription and sure like it fine. Please enter my name on your catalogue mailing list, and trade literature. Thanking you.—Earnest Drug Co., 1699 Broadway, Denver, Colo.

Please place my name on your catalogue mailing list. Thanks.—S. H. Peck, Peck Refrigerator Service, 540 S. Locust, Pomona, Calif.

Am enclosing money order for \$3.00 for this year's subscription to REFRIGERATION NEWS. Would also appreciate being placed on the Service Man mailing list. Every good wish for Mr. F. M. C. George, and the entire staff and continued success for REFRIGERATION NEWS.—Chas. K. Vance, 414 E. Ninth St., Little Rock, Ark.

I am a recent subscriber to the NEWS. I understand you are making up a list of subscribers who desire to be placed on a mailing list to obtain circulars and catalogs from manufacturers. I would like to be placed on this list. I am a student of Utilities Engineering Institute and am just building up a service business in my territory.—R. A. Stempke, 721 So. Fifth St., W., Missoula, Montana.



I CAN DO THE JOB My U. E. I. Training Taught Me How'

The U. E. I. course of training in Electric Refrigeration was prepared with the cooperation of leading manufacturers. As a result, U. E. I. Trained Men are able to make good in almost any phase of Refrigeration work right from the start.

If You Need a Trained Refrigeration Man

call on the U. E. I. FREE Placement Bureau. Among the graduates of this School we have trained and competent Shop Mechanics, efficient Installation and Service Men and capable Sales Engineers available in almost every locality. Many already have practical working experience.

Save time, trouble and money by using this Placement Service when adding to your force or making a replacement. No charge to you or to prospective employees. Write, phone or wire for quick, courteous, efficient service.

UTILITIES ENGINEERING INSTITUTE
Established 1927

404 N. Wells St.
Chicago, Illinois

1841 Broadway
New York, N.Y.

Classified

RATES: Fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

SALES ENGINEER WANTED Prominent manufacturer of automatic control equipment has several openings for sales engineers. Previous University training or experience in air conditioning and heating, and an acquaintanceship with architects and engineers is essential. Box 774, Electric Refrigeration News.

POSITIONS WANTED

EXPERIENCED in all phases of refrigeration manufacturing, production, engineering, and service. Now holding responsible executive position. Interested in air conditioning or household refrigeration with manufacturer or distributors. Also in managing refrigeration division of distributor. Have excellent character and references. Interested in permanent position which offers advancement. Box 783, Electric Refrigeration News.

FRANCHISE WANTED

IMPORTANT FIRM ESTABLISHED in Spain, dealing exclusively with the distribution of articles on the refrigeration line, wishes to represent in his country American manufacturers and exporters of all kinds of refrigeration parts except condensing units. Exceptionally placed to control the Spanish market with first-class articles. Excellent references. Address: Suministros Frigorificos, Castanos 25, Bilbao, Spain.

EQUIPMENT FOR SALE

DEALERS! We have 1500 used electric and gas refrigerators of nationally known makes, at real low prices. Frigidaire, Kelvinator and Norge water and air cooled domestic and commercial compressors up to 2 H.P. Special—Kelvinator and S Model Zerozone Compressors complete, \$15.00. Write for information. Macklam Refrigerator Sales Corp., 220 West Huron Street, Chicago.

ISOBUTANE We offer purest and dryest Isobutane for the most exacting scientific purposes; in your 80 lb. cylinders at \$75. in our 120 lb. cylinders, \$70. in small lots at \$1.00 per pound. The Standard Refrigeration Co. of Pittsburgh, 1148 Dohrman St., McKees Rocks, Pa.

NINE SIX HOLE DOUBLE ICE CREAM CABINETS sacrifice price only \$33.00. Special 10% discount in lots of 2 or more. Cabinets are in original crates. Direct expansion type built-in coils. Stainless steel tops. Well insulated. Send for Refrigeration Bargain list. Pioneer Refrigeration Equipment, 33 Warren St., New York City.

NEW WAUKESHA Refrigeration at 70% discount from factory list price: Waukesha gasoline powered refrigerator, Waukesha gasoline powered ice maker, Waukesha gasoline powered milk cooler. Post Office Box 823, Enid, Oklahoma.

ATTENTION SERVICE MEN: A charging valve for G.E. sealed units (Monitor Top, etc.) hand wrench included, for only \$6.25. All orders C.O.D. We pay the postage. Act now! Be ready for that service call. Distributors. Refrigeration Equipment & Supply Co., 5733 W. Chicago Ave., Chicago, Ill.

HERMETIC UNITS REPAIRED GENERAL ELECTRIC sealed units repaired, rebuilt, exchanged. Guaranteed service. Our modern shop is especially equipped to efficiently repair these units. Prices low and workmanship the best. Give model number when writing. Immediate service. Rex Refrigeration Service, Inc., 446 East 79th St., Chicago.

GENERAL ELECTRIC sealed units repaired, rebuilt. Guaranteed workmanship. The largest shop and best equipped in the United States. Give model number when writing. Immediate service. Satisfied customers in every part of the country. Refrigerator Engineering Parts and Service Co., 2800 So. Parkway, Chicago, Ill.

MAJESTIC UNITS

TIRIED OF BEING FOOLED—we really fix your Majestic units, make them freeze faster and run less than when they were new, \$17.50 to \$37.50, with a two-year written guarantee. Send your units to Ft. Smith and get them fixed right. Peno Service Company, Ft. Smith, Ark.

REPAIRS

ALL MAKES household, commercial thermostats rebuilt, bought, sold. Send me transportation prepaid, five defective or obsolete thermostats. I will repair and return one free of charge for remaining four. Replacement parts bought, sold. Telephone Flushing 9-2206. S. F. Harris, 137-66 Holly Avenue, Flushing, N.Y. Write for price list.

ARTIFICIAL FOOD DISPLAYS

ARTIFICIAL FOOD DISPLAYS at prices you can afford to pay. A realistic food set of meats, fruits and vegetables for every make refrigerator. Complete sets from \$3.00 to \$6.00. Write your source of refrigerator supply or direct to Cincinnati Doll Co., 311-313 E. Twelfth St., Cincinnati, Ohio.

SCHOOLS

REFRIGERATION AND AIR CONDITIONING are two of our best depression-proof industries to men who know their business in these lines. Cut and try methods are passing out. Learn these subjects by combined course in theory and practice. For details write Detroit School of Refrigeration, 6517 Grand River, Detroit, Mich.

REFRIGERATION NEWS

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS.

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TEN CENTS PER COPY

Sale of 186,200 Units in February Eclipses Record

DETROIT—Following the precedent set in January, sales of household electric refrigerators by manufacturers to distributors and dealers throughout the world in February totaled 186,200 units, smashing all previous records for the month, according to estimates compiled by ELECTRIC REFRIGERATION NEWS.

The February total is 45% greater than the 128,300 units shipped in February, 1935, the previous high February in the industry's history.

Fourteen manufacturers reporting to the Household Refrigeration Section of the Refrigeration Division of National Electrical Manufacturers Association had total sales to distribu-

tors and dealers of 173,196 units for the month of February. This compares with February shipments last year by Nema members of 116,786 units.

Reporting sales to Nema for February were Apex, Crosley, Frigidaire, General Electric, Gibson, Leonard, Kelvinator, Norge, Servel, Stewart-Warner, Sunbeam, Uniflow, Universal Cooler, and Westinghouse.

In the tabulation of Nema company household sales by states, New York led with 18,145 units, with California, reporting 15,150 sales, a close second. Pennsylvania, reporting 11,734 sales, was third, and Illinois, with 10,484, fourth.

Kitchen Modernizing Bureau Is Operating In 38 States, Utility Sales Heads Told

By Phil B. Redeker

CHICAGO—Kitchen Modernizing Bureau programs have swung underway in 38 states under the sponsorships of dealer groups and utilities, according to reports made by the Kitchen Modernizing Bureau at the Third Annual Sales Conference of the Edison Electric Institute at Edgewater Beach hotel here last week.

"Cooperation" was the keynote of the sales conference. Utilities that do not merchandise appliances were urged to put on campaigns that will help the dealer to sell his products.

Utilities that do merchandise were urged to design their campaigns so as to build more sales for dealers in their communities, as well as for themselves. Examples of highly successful programs by both non-merchandising and merchandising utilities were presented at the sales conference, and are reported in the latter part of this story.

Nearly every speaker at the conference lashed out vigorously at the attempt of the Federal government to cripple the utility industry. The attitude of the utility executives indicated that they are in a fighting mood, and that they are going to carry their side of the story to the public.

Concerning the progress of the Kitchen Modernizing program, reports were made by representatives (either in person or by letter) from local bureaus in 38 states.

Samples of some of the activity conducted by various bureaus are:

Philadelphia Electric Co. set up displays of "before and after kitchens" on its display floors, and put in all-electric kitchens in several model display homes. It also tied in with the Prudential Insurance Co.'s plan for disposing of old properties by putting new electric kitchens in some of these homes. Attractive booklets titled "Step Saving Kitchens" were distributed to housewives.

A contest for girls in the planning of a model kitchen, using paper cutouts of major kitchen appliances, has been the highlight of the activity in Knoxville, Tenn. A full newspaper page was used to present the contest idea, and to provide the illustrations for the cut-out.

Portland, Ore., dealers are using newspaper advertisements, showing well-dressed housewives in attractive kitchens, and with such captions as "I wanted more leisure."

In Boston the Edison company is swinging behind the program with newspaper and radio advertising, and model floor displays.

In outlining the accomplishments of the Kitchen Bureau at the opening sales conference, Vice President G. E. Whitwell of the Philadelphia Electric Co., chairman of the Bureau, declared that in the committee meeting the (Concluded on Page 11, Column 1)

G-E Dealers and Salesmen Gather Around Radios as Executives Tell Sales Ideas

By T. T. Quinn

DETROIT—More than 300 dealers and salesmen in Caswell, Inc.'s Michigan distributorship, typical of other groups throughout the nation, met Monday morning in Hotel Statler to hear General Electric Co.'s internationally broadcast "Hour of Ours" and make final plans for G-E's spring "Refrigeraria Sweepstakes," which opens today.

Opening the meeting, S. C. Caswell, head of the distributorship, spoke of General Electric's reputation and the public's confidence in it; of the company's pioneering work in introducing the hermetically sealed refrigerator mechanism, the all-electric kitchen, and the "New American" home.

He pointed to the trend toward sealed mechanisms evident in the industry this year, predicting that within three years most units manufactured would be of that type.

Sales Promotion Manager Harry Warren previewed the "Hour of Ours" program, after which the broadcast was tuned in on one of G-E's big 20-tube sets.

Opening the radio program, G-E President Gerard Swope emphasized the fact that the company's appliance department had been built around the refrigerator, and that it had led the way in making several basic improvements in design and practice.

Chief among these, he said, were the hermetic unit, the all-steel cabinet, and the five-year guarantee.

Vice President C. E. Wilson, second speaker on the program, reminded his listeners that they were selling not

so much appliances as a better method of living.

Speaking directly to G-E's retail selling organization, Mr. Wilson praised them for their work in the past, a work which, he said, had brought higher standards of living to hundreds of thousands of homes.

Good salesmen, Mr. Wilson said, deserve the confidence of the people with whom they deal—and get it, because they are not selling products, but service and better living.

Final speaker was P. B. Zimmerman, general manager of the company's appliance and merchandise department. Mr. Zimmerman spoke of the three "P's"—prospect market, product, and presentation.

Resources of the research and engineering department, he said, are back of General Electric salesmen in the field; and he emphasized the part which kitchen planning can play in lightening the housewife's daily work.

Starting with the refrigerator as a central unit, the salesman can remake the kitchen with the range, water heater, sink unit, clock, and better lighting, Mr. Zimmerman said. Coming as servant rather than as a salesman, he is welcomed as a consultant.

Interspersed on the program were songs by Richard Bonelli, the G-E men's and women's chorus, and the G-E orchestra, directed by Harold Levy.

Following lunch, the salesmen were addressed by members of the distributor's staff.

Copeland Sells 5-Year Plan on Household Units

Warranty Covers Models Sold in United States

DETROIT—A five-year warranty plan on all Copeland 1936 household condensing units, optional at a cost of \$5 added to the regular selling price, was announced last week by H. O. Seltsam, vice president and general manager of Copeland Refrigeration Corp.

The plan covers all household refrigeration systems for sale in the United States made by Copeland, and sold by either that company or Truscon Steel Corp.'s refrigeration division, Mr. Seltsam said.

The standard one-year warranty will continue to cover all purchasers who do not wish to buy under the five-year plan. Retroactive, the plan is applicable to all the company's 1936 models already sold.

Crosley Warranty Is Made Mandatory

CINCINNATI—Crosley Radio Corp. has revised its five-year protection plan to cover all purchases of Shelvadore electric refrigerators, it was announced last week.

This action rescinds the optional five-year plan which the company originally announced. Cost of the guarantee is \$5, added to the suggested list price. Both open and sealed type compressor units are covered in the plan.

Grunow Production Now 500 Daily

CHICAGO—Operating seven days a week, the cabinet and assembly plant of General Household Utilities Co. on Pulaski Road here is now turning out 500 to 600 Grunow electric refrigerators daily, declares H. J. Shartle, sales manager of the General Household Utilities Co.

Production has been at this pace for about the last four or five weeks, Mr. Shartle claims. He states that this is about the peak production on refrigerators, and that no great production step-up is contemplated.

Mr. Shartle expects that the amended plan of reorganization for the General Household Utilities Co. (as reported in the March 11 ELECTRIC REFRIGERATION NEWS) will be given approval this week, and that the company will soon be no longer operating under "77B" of the Bankruptcy Act.

First 17 orders which the company received for April delivery of refrigerators totaled 7,500 units, Mr. Shartle says.

According to Mr. Shartle, the number of Grunow distributors now handling the refrigerator line is approximately the same as it was a year ago.

DuPont Cuts Prices on Artic Refrigerant

WILMINGTON, Del.—A reduction of 5 cents per pound in the price of Artic methyl chloride, effective April 1, was announced today by officials of the R. & H. Chemicals Department of E. I. du Pont de Nemours & Co., Inc.

Economies in manufacture and increased use of the refrigerant were given as reasons for the reduction.

Dunlap Is General Field Assistant of Gibson

GREENVILLE, Mich.—A. A. Dunlap, formerly eastern district manager for Easy washers and Fairbanks-Morse refrigerators, has joined the sales organization of Gibson Electric Refrigerator Corp. as general field assistant, L. E. Taufenbach, Gibson sales manager, reports. E. F. McNees has been appointed Gibson representative in the Kansas City territory.

'Plug-In' Appliances Out as FHA Bill Nears Passage

WASHINGTON, D. C., March 31—Financing by the FHA of sales of household electric refrigerators of the plug-in type will in all probability cease tonight as the House of Representatives is expected today to approve a revised bill which extends Title I of the National Housing Act (which expires today), but which eliminates the financing of sales of detachable equipment.

cost more than \$2,000. Whether refrigerators that are permanently attached will be eligible is probably a matter of interpretation.

The bill as it now stands extends Title I to April 1, 1937, unless the President terminates it earlier.

Under the terms of the extended Act the borrower must either own property to be improved, or hold it under lease running at least six months beyond the term of the loan. Loans can be made for improved property only, thus eliminating new construction.

Approved financial institutions will be insured against loss up to 10% of the total they advance for FHA loans, instead of 20%, as has been the case. Total liability which the FHA administrator may incur for this insurance has been reduced from 200 million to 100 million dollars.

Reserves already accumulated on 20% basis are not applicable to losses sustained on loans made after March 31 of this year. New reserves must be started by lending institutions beginning April 1 on the 10% basis.

Insured loans up to \$50,000 for commercial and business establishments are made possible in the proposed extended Act.

O'Neill Heads Leonard Merchandising Division

DETROIT—Addition of a merchandising division to Leonard Refrigerator Co.'s sales organization was announced last week by R. I. Petrie, Leonard sales manager.

J. J. O'Neill, formerly manager of Leonard's department store division, heads the new division. Associated with him are six field men: A. S. Miller, E. C. Toohey, C. P. Humphries, J. J. Finegan, R. I. Eshman, and R. B. Maxwell. Each of these men has had extensive experience in refrigeration sales work.

Formation of the new division marks the first step in the "Man Power Program" announced by Leonard at its distributor convention in Grand Rapids in January.

In carrying out the program, the six field men will contact and train distributors' personnel directors, equipping them to select and train retail salesmen for dealers. Personnel directors (Concluded on Page 2, Column 3)

Hartford Court Ruling in Rackliffe Case Puts Approval on 'Exclusive Franchise'

HARTFORD, Conn.—Judge Newell S. Jennings of Hartford County Superior Court has overruled the demurser, alleging violation of the Sherman and Clayton anti-trust laws, filed by Mayflower Sales Co. of this city in its defense against a breach of contract suit filed by Rackliffe Bros., Inc., Kelvinator Connecticut distributor.

In its ruling, the court held that the definition of Rackliffe Bros.' contract with Kelvinator Corp. as an "exclusive franchise" was accurate, and that the terms of the contract were not so oppressive as to justify Mayflower Sales Co.'s claim of interference with freedom of trade or competition.

Rackliffe Bros., in its suit against Mayflower Sales Co., charged that the latter had violated its contract by turning refrigerators bought from Rackliffe over to H. L. Seitzer of Hartford, who in turn sold them to R. H. Macy & Co., New York City (ELECTRIC REFRIGERATION NEWS, March 4).

The refrigerators were sold to Mayflower Sales Co., the plaintiff asserted, with the understanding that they were to be installed in Hartford and New Haven apartment houses; and, as a result of the claimed contract violation, Rackliffe Bros. was forced to pay damages of \$3,276.11 to Kelvinator, which held it responsible for all refrigerators sold in its territory.

In its demurser, Mayflower Sales

Co. argued that the Rackliffe Bros.-Kelvinator distributor's agreement was in violation of the anti-trust statutes.

The court's ruling follows:

"The brief of the defendant indicates that its chief reliance is on grounds of demurrers 4 to 11 inclusive. These invoke the protection of the Sherman and Clayton Acts, which are cognizable only in the Federal court. (Pennsylvania-Dixie Cement Corp. vs. Lines Co., 119 Conn. 603-607.) While the question in that case was on a demurser to a cross-complaint setting up a cause of action under those statutes, the same principle applies here."

"Furthermore, the terms of the contract complained of do not appear to me so oppressive as to justify interference. As to time, it could be cancelled by either party; as to space, it was limited to this state; as to character, the defendant was not forbidden to sell outside its territory, but was obligated to pay a certain penalty for doing so. The definition of the arrangement as an 'exclusive franchise' by the plaintiff seems to me accurate."

"The case of Bridgeport vs. Aetna Indemnity Co. (91 Conn. 197-204) disposes of the remaining grounds of demurrer, to the effect that the plaintiff is entitled to relief only for loss actually sustained. The demurser is overruled."

Distributors of S-W Line Hear New Plans Outlined at Factory

CHICAGO — Stewart-Warner distributors from all points east of the Rocky Mountains gathered March 20 at the Drake hotel here to discuss the new selling plans for the S-W refrigerator.

Although men from various eastern centers experienced considerable difficulty in getting out of and through the flooded areas, there was 100% attendance of distributors at the meeting, company officials report.

F. A. Hiter, vice president and general sales manager; Homer Kunkler, assistant to Mr. Hiter; John Ditzell, refrigerator sales manager; and Fred Cross, advertising manager, outlined for the distributors the new selling plans for S-W refrigerators.

Mr. Hiter declared that within a month after the new S-W models had been introduced they were moving at a rate more than double that of the corresponding time last year, and that this pace has been maintained, so that sales are still running over 100% above those of a year ago.

Pacific coast distributors will gather in San Francisco early this month for a meeting, at which the new sales program will be outlined to them.

Morley Bros. Host to 250 S-W Dealers

DETROIT—Morley Brothers, Inc., Michigan Stewart-Warner distributor, was host to 250 of its Detroit area dealers and salesmen at a dinner meeting March 25 in the Wardell hotel.

Carl Crandell, appliance sales manager of the company's Detroit branch, was in charge of the affair.

Sales features of the 1936 Stewart-Warner line and its construction details were outlined by William Beil, factory field representative. A. H. Kessler, of the Stewart-Warner sales promotion department, urged dealers and salesmen to get in on the "dealer's choice" Poker Contest which the company is now running nationally.

Hays MacFarland, head of Hays MacFarland & Co., Stewart-Warner advertising agency, painted a broad picture of the opportunities, financial and otherwise, which successful salesmanship offered.

Salesmen, as a class, are the highest paid workers in the country today, Mr. MacFarland said. He compared the average salesman's income with that of the average lawyer or physician, asserting that, for time and training expended, salesmen receive a higher return than either of the other two.

He emphasized the rewards which successful salesmanship pays, pointing to several top executives in leading companies who began as salesmen.

Other speakers at the meeting were L. E. Buetow, manager of Morley Brothers' Saginaw division office, and E. L. Sholz of C. I. T. Corp.'s Detroit branch.

Better REFRIGERATION for the WAYSIDE REFRESHMENT STAND

THE cost of operating refrigeration equipment is perhaps more important to the owner of a small highway refreshment stand than to the larger city operator who enjoys a year round business. For this reason, many hundreds of barbecue and refreshment stands now save money by using Copeland Commercial Refrigeration. At low cost, these retailers have eliminated food spoilage and built up good trade at the soda fountains. Copeland economy means reduced electric current consumption plus long-time trouble-free performance. Every buyer of commercial refrigeration can be sold on Copeland. You could do well with this great line. A few territories are available. Write or wire.

COPELAND
REFRIGERATION CORPORATION
Manufacturers of a complete line of Household and Commercial Refrigeration
Holden Ave. at Lincoln . . . DETROIT, MICH.



* COPELAND *
Commercial
REFRIGERATION!

Works Manager



DETROIT—G. V. Pollard has been appointed general works manager in charge of Kelvinator Corp.'s manufacturing operations at Detroit and Grand Rapids, it was announced last week by G. W. Mason, president and chairman of the board.

Mr. Pollard has been director of quality for Kelvinator since Nov. 1, 1928, in which capacity he was in close touch with all phases of the manufacturing and production of Kelvinator products.

Before his connection with Kelvinator, Mr. Pollard spent seven years as a divisional superintendent for Chryslers Corp., and two years as superintendent for the Budd Wheel Co.

Congress Extends EHFA Until Feb. 1, 1937

WASHINGTON, D. C.—Congress last week passed a bill to continue the Electric Home and Farm Authority as a federal agency until Feb. 1, 1937, or any earlier date decreed by the President.

The EH&FA, originally a subsidiary of the Tennessee Valley Authority, was reorganized last August as a subsidiary of the Reconstruction Finance Corp.

Serving as a rediscount agent for instalment purchases of electric equipment, it does not lend directly to purchasers, but aids utility companies, dealers, and municipalities to extend credit at reasonable rates to purchasers of appliances. Financing is on a recourse-to-the-dealer basis.

A description of how the plan works with a utility is told in a report published on page 12 of this issue.

1,798 Units in February Sales in Cleveland

CLEVELAND—Household electric refrigerators sold in Cuyahoga county by distributors totaled 1,798 units in February, 1936, as compared to the 1,267 units sold in the same month last year, an increase of 41.9%.

Milwaukee Bureau Holds 'Pep' Meeting; Stedman is Speaker

MILWAUKEE—First "pep meeting" of the newly organized Milwaukee Electric Refrigeration Bureau was held at 8 p.m. last Thursday in the Elizabethan Room of the Milwaukee Athletic Club.

More than 350 persons, among whom were dealers, salesmen, distributors, and utility sales department representatives, attended the meeting, at which Frank W. Greusel of the Maurer Greusel Co., manager of the Bureau, presided.

Gerald P. Stedman, vice president in charge of market planning of Cramer-Krasselt Co., advertising agency, featured the evening's speakers with an address explaining the bureau's drive for 10,000 household refrigerator sales this year, the merchants' retail training classes in selling which the bureau is sponsoring, and the proposed survey of Milwaukee's electric appliance market.

In discussing the organization's plans, Mr. Stedman predicted that, with the aid of the bureau's promotional campaign, local dealers should sell a "minimum" of 15,000 electric refrigerators in Milwaukee County during 1936.

Other speakers included Gordon Fairfield of Morley-Murphy Co., representing distributors; William Seemuth of Real Radio Service, Inc., representing dealers; James Owen of the Boston Store, speaking for department stores; and A. A. Englehard of Milwaukee Electric Railway & Light Co., representing the utility.

Directors to Train Men For Leonard Dealers

(Concluded from Page 1, Column 5) tors thus trained will be in a position to assume responsibility for setting up an adequately manned, efficient sales force in each dealer organization.

Moving into a dealer's territory, the director becomes, in effect, a member of the dealer's organization. He will prepare and place advertisements in local newspapers, receive and examine applicants, select men for sales jobs, and conduct lectures and demonstrations on tested selling practices.

After satisfying himself that the dealer's sales machine is in smooth-working order, the director moves on to the next dealership and repeats the procedure.

Leonard officials expect the plan to effect closer cooperation between factory, distributor, and dealer sales organizations.

Domestic Power Service Averages 4.99c per Kwh.

NEW YORK CITY—Average price paid for domestic electric service during the 12 month period ending Jan. 31, 1936, was 4.99 cents per kwh., according to statistics released by Edison Electric Institute.

Statistics show that there has been a steady decrease in the price of electricity for domestic use. From an average of 22 cents per kwh. in 1893, the following average rates indicate the reductions which have been made: 1903, 15 cents; 1913, 8.7 cents; 1926, seven cents; 1931 six cents.

Retarded by the depression, it has taken five years for the average price to go from the six-cent level to its present rate of less than five cents.

Since 1925, the increase in current consumption resulting from the use of electric refrigerators, radios, and other household electrical appliances has accelerated the decline in rates.

du Pont Announces - - - Lower Price for

Sales Idea of the Week

By V. E. (Sam) Vining

I ran across a bit of perfect selling courtesy in the post office at Oak Park, Illinois.

I bought 20 postage stamps, and the girl who waited on me put them in an old envelope taken from a pile stacked at her window.

I'll bet that postmaster is a salesman, and a gentleman.

And while you are thinking that over contrast it with the grocer who always sells you potatoes in a sack so flimsy that it tears down the side just as you get it home, and drops the spuds all over the kitchen floor.

Somewhere some grocer is earning a place in the hall of fame for using just a little common sense—and, incidentally, I'll bet he sells a lot of potatoes.

May it be my happy chance to meet him.

And while you are figuring that one out you might as well wonder with me why some man in the canning business doesn't design a "ketchup" bottle that has a chance of standing on its own bottom; or one that doesn't pour with a reluctant stutter—"Buzzom" companion stuff.

Now let's go back to your business. I'll bet there are 20 little things that you could improve on—either in the way of service or selling or design—if you just got your mind out of hock long enough to see them.

Back up a bit—and get a perspective.

Earnings

Stewart-Warner Corp.

CHICAGO—Earnings of Stewart-Warner Corp. for 1935 tripled those of 1934, the company's annual report shows. Consolidated net income for the year ended Dec. 31, 1935, after all charges including depreciation and federal taxes, was \$1,724,313, equivalent to \$1.39 a share on the 1,241,847 shares of common stock outstanding in the hands of the public at the close of the year.

For the year ended Dec. 31, 1934, net income was \$571,968 or 46 cents a share on the 1,246,847 shares of common stock then outstanding.

Sales for 1935 totalled \$20,479,164, an increase of 19.9% over the \$17,075,344

sales for 1934. Consolidated balance sheet at Dec. 31, 1935 shows current assets totalling \$8,056,535, including cash of \$2,412,188, against current liabilities of \$1,740,698, or a net working capital of \$6,315,837.

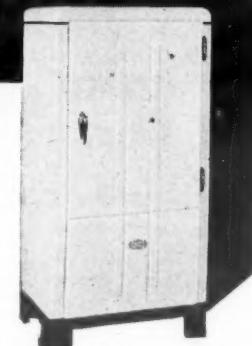
At Dec. 31, 1934, current assets totalled \$6,043,179, including cash of \$1,024,084, against current liabilities of \$1,155,324 or a net working capital of \$4,887,855.

Dividend payments were resumed during the year after a lapse since 1930.

Richardson Resigns Post As Crosley Salesmanager

CINCINNATI—Howard E. Richardson, for the past two and one-half years general sales manager of Crosley Radio Corp., has resigned his position, effective March 31, to re-enter the distributing field, in which he was formerly engaged.

STEADY PROFITS WITH ICE-O-MATIC



because the household and commercial lines together insure you a steady, year-round profit! Ice-O-Matics are precision built. They use Methyl Chloride, one of the best refrigerants known. They provide pressure lubrication and reserve power which insure long life and economy of operation. Complete line of Milk Cooling Equipment, including gas engine operated units also available. Write or wire for full details of franchise.

WILLIAMS OIL-O-MATIC HEATING CORP., Bloomington, Ill.

World's Largest Specialists in Temperature Control

MANUFACTURERS AIR-O-MATIC, ICE-O-MATIC, OIL-O-MATIC

WILLIAMS
ICE-O-MATIC
REFRIGERATION

ENGINEERED

Artic

REG. U. S. PAT. OFF.

(DUPONT METHYL CHLORIDE)

THE du Pont Company is pleased to announce that effective April 1, 1936, the price of ARTIC (Methyl Chloride) was reduced 5 cents per pound. Phone or write the nearest du Pont distributor for further information.

This price reduction is in line with the du Pont policy to pass on to the trade economies made in manufacturing and by increased use of its products.

The R. & H. Chemicals Department

E. I. DU PONT DE NEMOURS & COMPANY, INC.

Wilmington, Delaware

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco



★ ★ ★ World's Fastest Sales Growth

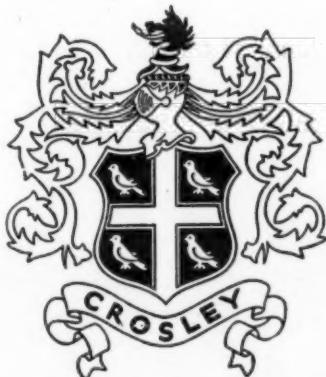
BECAUSE: *World's Most Beautiful Refrigerator*

**PLUS THIS MUCH MORE
IN A SHELVADOR !!**



**18 MODELS, 6 SIZES. PRICED FROM
\$99.50 TO \$214.95 INCLUDING
DELIVERY, INSTALLATION AND - - -
FIVE-YEAR PROTECTION PLAN**

All prices slightly higher in Florida, Texas, Rocky Mountain states and West.



CROSLEY

THE CROSLEY RADIO CORPORATION, CINCINNATI - POWEL CROSLEY, Jr., President



Around the World

With George F. Taubeneck

80 Attend Meeting of Hawaiian Electric Refrigeration Bureau

Day after we landed in Honolulu, we were guest of the Electric Refrigeration Bureau of Hawaii at a luncheon attended by 80 members of the organization, in the Alexander Young hotel.

The Bureau is an association of 12 distributors of electric refrigerators on the Islands, and all of the men attending the luncheon were members of the sales organizations or those companies.

Coming to a luncheon when you're hungry is only normal—but these men were hungry for more than food. For more than an hour after the meal, this observer was put under a bombardment of questioning such as has seldom been his fortune to face in all his years of reporting and speech-making.

Here's the Honolulu *Star-Bulletin's* report on the meeting in its Feb. 1 edition:

"Eighty members of the Refrigeration Bureau of Hawaii yesterday noon at the Gold Room, Alexander Young Hotel, heard George F. Taubeneck, editor of ELECTRIC REFRIGERATION News, Detroit, forecast that 2,000,000 refrigerators will be sold in the United States during 1936 as against 1,700,000 for last year."

"He reported to his listeners that all electric refrigerator manufacturers are launching programs of expansion, with the 1936 keynote that of improved convenience features in all standard lines."

"The editor was a guest of the Refrigeration Bureau of Hawaii at luncheon during his stopover on a trip around the world in the interests of an extensive survey of refrigeration developments in foreign countries. It was reported that he is also looking into the possibilities of air-conditioning expansion in foreign lands."

"Taubeneck's discussion dwelt upon a soundly optimistic note throughout, and brought reports of increasing refrigeration business in every city visited throughout the Mainland on his way here."

Those who attended the luncheon were:

Electric Appliances, Ltd.: Albert C.

How to Send Letters To the Editor

Letters may be addressed to George F. Taubeneck, Editor of ELECTRIC REFRIGERATION NEWS, in care of the following:

(Mail to arrive before May 1)
Mr. D. H. McClellan, Mgr.
British Thomson-Houston Co., Ltd.
No. 44 Chancery Madabagh,
Immeuble Galante,
Cairo, Egypt.

Mr. Max A. Greenburg, Mgr.
British Thomson-Houston Co., Ltd.
26 Gruenberg St.,
Tel Aviv, Palestine.

(Mail to arrive before May 15)
Mr. H. A. Granary
Frigeco, S.A.
79 Avenue des Champs-Elysees,
Paris, (Se) France.

Mr. Kurt Gutekunst
Compagnia Generale di Elettricità
Via Borgognone, 34
Milan (124) Italy.

Warchalowski, Reckzugel & Co.
Paulusgasse, 3
Vienna, Austria.

(Mail to arrive before June 1)
Mr. Ulrich von Kremski, Mgr.
Frigidaire G. M. b. H.
Wiebestrasse 12,
Berlin, N.W. 87, Germany.

Nils Laurin, Manager
Refrigeration Dept.
Aktiebolaget Elektrolux,
Stockholm, Sweden.

(Mail to arrive before June 15)
Mr. K. Altes,
Messrs. Mijnsen & Co.
Keizersgracht 205,
Amsterdam, Holland.

Mr. J. Raymond, Editor
Cold Storage & Produce Review
Empire House
St. Martin's le Grand
London, E.C., England.

Kong, president; Leonard C. Wong,
Peter L. Lee, Jacob Jacobson, Jack
K. Ho.

Palama Appliances: K. Fukuya,
Kamado Takushi, J. P. Kupiheo, M.
Murai, R. Hadano, and M. Kumaishi,
manager.

W. A. Ramsay, Ltd.: P. S. Pell, vice
president and general manager; Allen
W. Smith, manager of appliance de-
partment; Otto Ludewig, in charge of

wholesale and advertising; Donald
Noble, manager of service department;
Andrew Ho, Arlo Martin, G.
W. Tivy, Selwyn Jenkins, Fred R.
Hills, M. S. Song, W. J. Kern.

Electric Way Shop: Sam McClay,
manager; J. A. Morales, Harry H.
Fleming, J. E. Hurtt, M. Douglass.

Hawaiian Electric Co.: C. E. Nolan,
merchandise manager; H. R. Slocum,
sales manager; V. A. Nahl, W. Romer,
N. Sasaki, B. F. Young, R. Maeyama,
C. L. Rose.

Von Hamm Young Co.: C. C. Von
Hamm, president; E. E. Bodge, vice
president; R. A. Anderson, treasurer;
C. H. Dyer, sales engineer; Robert
Culver, W. B. Rutherford, Louis Bos-
tic, E. D. Chartrand, F. F. Friesell.

Brilliant Piano Shop: Oliver P. Brill-
hart, Charles Garcia. Standard Sales:
N. Kimura, manager. Thayer Piano
Co.: Carl J. Miller, F. C. Hagestad.

Theo. H. Davies & Co., Ltd.: George
Tangars, vice president; J. W. Ruben-
son, sales engineer. Bergstrom Music:
F. J. Choisez, manager. Lewers &
Cooke, Ltd.: J. Van Cleve. Electric
Supply Co., Ltd.: H. K. Ichida. Geo.
H. Eberhard Co.: Paul Lindner. R.
A. Howe & Co.: R. A. Howe, manager.

* * *

Geisha Girls and Stuff

H. K. ICHIDA, president of the
Honolulu Electrical Supply Co., manu-
facturer of practically all the neon
signs hung up on the Islands (and
there are plenty), and Grunow dis-
tributor, had a good idea while we
were there.

It was his notion that everybody
we saw in Honolulu would want to
talk business, and that by the time
we got around to him, we'd be pretty
sick of it. So-o-o-o, he threw a party
for us, in a Japanese tea house, with
geisha girls and all the trimmings.
And refused to hear or say a word
about refrigeration!

First a charming and lovely Voice
called us up to issue the invitation. It
turned out later to belong to Mr.
Ichida's secretary, Miss VIOLET
SURAKI, a lovely and brilliant young
girl of Japanese parentage and
Hawaiian birth, who was brought up
by a German family.

Next the affable PAUL LINDNER,
Hawaiian representative of the George
Eberhart Co. of San Francisco, called
for us to take us through the most
baffling maze of alleys in our memory,
which must be traversed in order to
arrive at this tea house.

Mr. Lindner, with whom we had a
couple of long talks prior to the
party, understands the people of
Honolulu as well as anyone we en-
countered during our stay.

And then the party. The tea house
was typical Japanese architecture,
with walls which slide like panels.
In a long room a table was set—some
50 feet from end to end—with heaps
of fish (both raw and cooked, and
including such delicacies as shark
meat), cold meats, fruit, and various
Japanese dishes of unfathomable
origin or content.

The table was no higher than eight
inches off the floor, and you sat cross-
legged—with your shoes off, of course
—in front of it on little mats.

As you ate, the geisha girls watched
your *sake* cup hawklike, filling it to
the brim the moment you had taken
a sip from it. *Sake*, you probably
know, is Japanese whiskey, brewed
from rice, and served hot out of a
teapot.

Geisha girls (at least those we saw)
are approximately as attractive as the
Sea Hag in the Popeye comic strip.
But they are pleasant, girly women,
and they wear picturesquely wrapped
clothes.

After some begging, one of them
played and sang (the music was as un-
intelligible as the words) while another
did a solemn dance which was chiefly
hand movements and slow motion. It
made us think of what an Alberta
Rasch dancer would be like if she
attempted a comeback after becoming
a great grandmother.

After the feast and the dancing we
danced; and there was much pleasant
converse and simple merrymaking.
The sake kept coming, and everybody
had an immensely good time. Fact is,
your correspondent enjoyed himself
more than he had in a month.

Had to leave before midnight

Introducing—



R. A. Anderson, president of the
Refrigeration Bureau of Hawaii,
introduces the editor to Bureau
members.

because my guest, GEORGE CHRISTENSON captain and acting coach of the Detroit Lions, had to play a football game next day, and needed his sleep. Don't know how much longer the party lasted, but it looked good for all night.

Mr. Ichida, Miss Suraki, and Mr.
Lindner were marvelous hosts (and
hostesses), lavishing good cheer and
attention on us in a manner that made
us feel as if our being there was just
about the dandiest thing that had
ever happened to them.

Second-Hand Business

PHIL PELL of the Ramsay company thinks that his concern has made almost an ideal solution of the trade-in refrigerator situation. Their entire intake is sold to S. E. GILES, who operates a training school for embryo service men.

Mr. Giles turns these refrigerators over to his students, who rebuild them. Then he advertises the renovated jobs with newspaper want-ads, displays them in his store, and sells them at prices ranging from \$75 to \$200 each.

It works out pretty well for all parties concerned. Ramsay has a market for all refrigerators taken in on trade, an automatic market, with no sales expense, no investment tie-up, no worries, and—most important of all—no responsibility.

When the used box is sold, Mr.
Giles assumes the responsibility for
its working, not Ramsay. And in the

Islands that's an important considera-
tion, for good will means more there
than it does elsewhere. There really
are only a few mercantile establish-
ments, and each of these big concerns
sells everything in the world and some
things "out of this world," so respon-
sibility for an article is quite an item.

On Mr. Giles' side, he doesn't have
to buy any equipment for his students
to learn and practice on—Ramsay
furnishes it in the form of trade-in
refrigerators. And, he has no labor
cost in rehabilitating these used boxes,
for the students do the work as a
part of their training.

Replacement business is already
assuming a large place in the Hawaiian
sun. Refrigerators don't last so
long there as they do in many another
spot. Mr. Giles showed us boxes in his
shop which were pretty well shot,
and they were 1932 and 1933 models!
Some of the older models he gets
are really a fright.

You see, an electric refrigerator
doesn't get a rest in Hawaii. It runs
approximately 50% of the time, every
day and every night, 12 months a
year. Moreover, climatic conditions
are conducive to rust. And there are
bugs! What cockroaches can do to a
refrigeration system is almost beyond
belief.

Chiefly, though, it's the boxes which
can't take it. Those which stand up
the best, according to Mr. Giles, are
porcelain-on-steel. If they are porce-
lain-on-wood, the bugs and climate get
the wood. Lacquered boxes from three
and four years back are really a
sight, and must be entirely refinished
by the Giles students.

And insulation. Boy! Does it absorb
moisture! After two years in Hawaii
most boxes would be better off if they
weren't insulated, avers Mr. Giles. The
exceptions are those which are insul-
ated with cork and Dry-Zero, which
stand up fine shape.

Nearly every refrigerator which
comes into his shop must be re-
insulated. He uses cork for this job.

Replacement parts are Mr. Giles'
chief hair-remover. Practically nobody
on the Islands, he maintains, keeps an
adequate stock of replacement parts.
He buys nearly \$100 worth of parts
a month from HARRY ALTER.

As a result of this situation, when
a used Norge comes into his shop for
rehabilitation, it comes out pretty much
a Kelvinator, Seeger cabinet, Gibson
cooling unit, and a modified Frigidaire
compressor form a frequently pieced-
together Giles hybrid.

The five-year guarantee is a laugh,
thinks Mr. Giles, especially in Hawaii.
Any dealer who attempts to provide
free service in the Islands for five
years is a sucker, in his estimation.

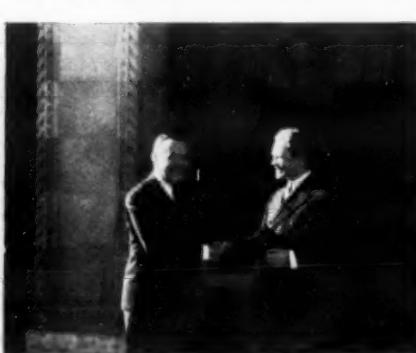
(Concluded on Page 5, Column 1)

- - Whom the Editor Interviewed



Above left: Phil S. Pell, vice president-general manager of W. A. Ramsay, Ltd. Right: H. W. Boynton, general manager of Honolulu Gas Co., at his desk. Lower left: Mr. Boynton again, this time at the Pali Cliff. Hawaiian scenic spot. Right: F. E. Lowrey of Lewers & Cooke.

Right: Mr. Boynton and A. N. Campbell of Honolulu Gas Co.



(1) George Taubeneck hands R. A. Anderson of Von Hamm Young Co. the latest copy of the News. (2) Learning by experience—a student in the S. E. Giles school rebuilds a used unit. (3) Demonstrating a range in the showroom of Hawaiian Electric Co. (4) The editor is welcomed to the Islands by C. E. Nolan, Hawaiian Electric merchandise manager. (5) J. W. Rubenson of Theo. H. Davies & Co. and some Friedrich commercial refrigerators.

(Concluded from Page 4, Column 5)
He guarantees all his jobs 90 days, and no more.

'Coatless' Tivy

Leading salesman of the Hawaiian Islands is said to be GEORGE W. TIVY of the Ramsay company in Honolulu. In 1935 Mr. Tivy sold 178 household electric refrigerators, 88 washing machines, 62 electric ranges, and five dishwashers.

That, gentlemen, is a record in any language.

What's more, a lucky landing of a big sale did not enter into the making of this record. Mr. Tivy regularly sold three or four refrigerators a week every month in the year!

Part of Mr. Tivy's act is never to wear a coat. All around Honolulu he is known as "coatless Tivy"; and when housewives call at the Ramsay showroom to look over an appliance they call for "that man who doesn't have a coat."

There isn't much more to the Tivy method other than hard work—calls morning, noon, and night—plus the assistance of Mrs. Tivy in digging up prospects.

Five years ago he came to Honolulu from the mainland, where he had worked all over the country for 13 years, selling Singer sewing machines. Now he declares Honolulu will be his home forever.

Mr. Tivy has the only all-electric kitchen on the Hawaiian Islands. Also he has a G-E home laundry. He believes firmly in selling the all-electric kitchen as a unit. Other salesmen, he feels, are too prone to sell the prospect just the appliances she wants to buy.

One of Tivy's specialties is "extending contracts." When the time payments on, say, a refrigerator are about concluded, he sells that customer a range or a washer, and the time payments—which have become more or less of a habit in that home, and hence do not seem to call for any extra expenditure or rearrangement of the budget—go right on as before.

Salaried Salesmen

Perhaps the second leading electric refrigerator salesman of the Islands is V. A. NAHL of the Hawaiian Electric Co. who sold 168 Westinghouse refrigerators in 1935, with a total retail value of \$31,798.

About 40 years of age, Mr. Nahl was a grocery clerk, with no previous specialty selling experience, when he joined the Hawaiian Electric sales staff. He works on a straight salary basis.

Just under Mr. Nahl was B. F. YOUNG, who sold 160 refrigerators in 1935—his second year of selling. In his first year (1934) he sold 89 refrigerators.

Mr. Young is a Chinese chap who had been working in the collection department of the Hawaiian Electric Co. when an employee selling contest came along. He did so well in this drive that he was put to work permanently in the appliance sales department, on a straight salary basis.

N. SASAKI, a Japanese salesman, landed orders for 104 Westinghouse refrigerators in 1935. Like the other two mentioned, he works on straight salary.

It should be noted, however, that these three salesmen who (contrary

Service and Second-Hand Business Is Good in Hawaii



Left: S. E. Giles, service school operator, and some of the used refrigerators his students have rebuilt. Center: J. Van Cleave of Lewers & Cooke inspects a washer. Right: One of Lewers & Cooke's service men.

to the generally accepted axiom that salaried salesmen take it easy) have done so well on a straight salary proposition, are eligible for extra cash and merchandise prizes at the end of contests.

Ice and Westinghouse

Hawaiian Electric Co., the public utility on the island of Oahu, sells both ice and Westinghouse electric refrigeration. Nobody in the organization seems to find anything inconsistent in that policy, and the two strange bedfellows seem to get along quite harmoniously.

F. E. BLAKE is general manager, and J. F. FENWICK, assistant general manager.

In addition to Westinghouse refrigerators, the Hawaiian Electric Co. handles all other Westinghouse appliances except ranges and water heaters, and the complete Hotpoint line with the exception of refrigerators.

Under the direction of C. E. NOLAN, merchandise manager, a retail selling crew works the Honolulu territory for the utility at top speed (for Hawaiians) 12 months of the year. One man of this sales force works on refrigerators exclusively; the other five sell other appliances.

Four other dealers have been franchised in Oahu, and seven more dealers have signed up on the other Islands. These dealers are under the direction of L. H. R. SLOCUM, wholesale manager.

Mr. Nolan believes in plenty of advertising, including a judicious use of direct mail, to get prospects. He does not insist on house-to-house canvassing.

An exceedingly pleasant and personable gentleman, Mr. Nolan is the kind who can inspire *salaried* salesmen to work diligently, effectively, and enthusiastically because they like him, and don't want to let him down.

His efforts have raised Westinghouse to a close second in the Honolulu household refrigeration race.

Von Hamm Young

Third in line among Honolulu's household electric refrigeration leaders is Frigidaire, which is sold by the Von Hamm Young Co.

As we have indicated previously, this concern operates everything from downtown Honolulu's biggest hotel to the largest one-story garage west of Chicago.

Frigidaire household and commer-

cial refrigeration is augmented by the Weber display case and wall-type refrigerator line (which is going good in the Islands), Frick commercial and industrial ice machines, Brunner compressors, Armstrong cork, Jamison cold storage doors, and Creamery Package equipment for dairies.

But that isn't all. Von Hamm Young is Hawaiian distributor and Honolulu dealer for Packard, Nash, Dodge, Hudson, and Terraplane motor cars; Mack, Federal, Doane, and Kenworth trucks; Firestone tires; Otis elevators; road, elevator, and baking machinery.

We could go on. There is a large insurance department, for instance, and an ornamental iron works, under the Von Hamm Young banner.

5-Year Guarantee

In order to keep in the race with General Electric and Westinghouse, the Von Hamm Young Co. has found it necessary to place a five-year guarantee of its own on Frigidaire household refrigerators.

For the last two years Von Hamm Young has maintained this policy entirely on its own responsibility, and has apparently made the grade without undue hardship.

Selected, directed, and trained by R. A. ANDERSON, Von Hamm Young maintains a retail sales force of five men in Honolulu, six dealers on various islands, and branches at Wahiawa,

near Schofield barracks, Ohau; Hilo, Hawaii; Wailuku, Maui; and Kapaa, Kauai.

Chiefly this concern depends on aggressive newspaper and radio advertising to get its refrigeration business. Mr. Anderson prepares his own copy from material submitted by the factory.

Commercial business has received attention equal to that of household in the Von Hamm Young organization. All told, there are approximately 1,000 Frigidaire and 250 Frick commercial refrigeration installations on the Islands.

Mr. Anderson is chairman of the Refrigeration Bureau of Hawaii, a position which he takes most seriously.

Wanted: An Agency

One of the biggest of Honolulu's whopper merchandising companies is Lewers & Cooke, which handles practically everything for the construction, furnishing, and maintenance of a building of any description.

At present Lewers & Cooke act as a dealer for Frigidaire under Von Hamm Young. They would like to be a distributor for a leading make of electric refrigerator (having recently relinquished the Apex refrigerator distributorship) and are at present doing some dickerling with three different manufacturers.

Of all the concerns in Honolulu,

representatives of Lewers & Cooke—F. E. LOWREY, LEWERS PARIS, E. S. GOODKNIGHT, J. VAN CLEAVE—were probably the most helpful and cordial to us during our stay.

Mr. Van Cleave carted us around town quite a bit, and Mr. Lowrey arranged a trip for us through a sugar mill. We got pretty well acquainted with them, and when we get back we should be in a position to give some darned interesting information about this well-established company to American manufacturers.

Lewers & Cooke has just finished a complete modernization of its ground floor sales rooms, changing both layout and color scheme.

The work was done to make shopping easier for customers of both sexes. Lewers & Cooke officials had noticed that, while some types of goods were in demand almost daily, customers often had considerable difficulty in describing their wants to clerks.

With that point in mind, a new system of display was worked out. New showcases, as well as new display racks and tables were built and installed. The main floor walls and ceiling were refinished in a lighter tone, and the ceiling covered with sound-deadening material.

With the new showcases, it is no longer necessary for the shopper to wait for salesmen to pull out box after box until the desired article is found—all articles are now on display, in the showcases and on the open-top glass counters.

Display tables, spotted throughout the showroom, show a variety of articles from the company's second-floor plumbing and interior decorating departments, as well as electric tools for home and shop use. Store windows have been rebuilt, and new and stronger lights installed.

Because Islanders have become so sold on the five-year guarantee, representatives of refrigeration manufacturers who don't offer it are scarcely in the race.

R. A. HOWE is the hard-working territorial distributor for Crosley, ALBERT C. KONG (Graybar) for Kelvinator, MASA KATAGIRI for Norge, and H. K. ICHIDA for Grunow. Other lines occupy the attention of these gentlemen considerably more than refrigeration.

Have you observed the trend?

Guarantees, warranties, protection plans, certificates, thermometers, proof selling, consumer tests, etc.

Sales, to be sure, are going up. The Spring of '36 thus far has piled up substantially better sales records than ever before.

But buyers are asking for proof. Today, more than ever before, the market is filled with "inquiring prospects." They want the facts. Superficial information is out. To sell, you must be able to point out advantages—and to prove them conclusively.

This, quite evidently, calls for a lot of information—on every competitive model on the market as well as on your own.

Most obvious in any information gathering program—the *Household Specifications Issue* of Electric Refrigeration News.

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Above: Members of Refrigeration Bureau of Hawaii at the luncheon honoring Editor George Taubeneck the day after his arrival in Honolulu. Lower left: E. S. Goodknight of Lewers & Cooke. Right: A busy scene in the office of Von Hamm Young Co., Frigidaire distributor.

Commercial Uses

Cutler-Hammer Develops New Line of Commercial Refrigeration Controls; 10 Basic Types Are Built

MILWAUKEE—An extensive new line of commercial refrigeration controls, supplementing the line of alternating and direct-current starters and overload devices which it has had on the market for several years, has been announced by Cutler-Hammer, Inc.

Although designed particularly for commercial refrigeration use, the controls may also be used on any service involving close temperature or pressure control. Ten basic types of controls are in the line, including dual, low side, and high-pressure cut-off mechanisms, with or without overload unit.

Overload Control Featured

A feature of the control is its overload unit, a solder film thermal unit of the same construction as those the company formerly furnished for commercial refrigeration service. For protection of motors, a complete line of interchangeable heater coils is provided, the same as used in Cutler-Hammer domestic refrigeration controls and other small motor starters.

This combination of overload with refrigerator control cuts the cost of both apparatus and installation, it is claimed.

Units are enclosed in rigid metal cases, to withstand abuse. Mountings are generally interchangeable with many controls previously used in this field.

Wiring Compartment Separate

Wiring compartment of the new controls is separate from the operating mechanism, and the latter may be sealed, if desired, to prevent tampering with adjustments or mechanism. Provision for two conduits permit use of the box as a terminal for wiring. Terminal arrangement permits use of the control as a pilot device for higher ratings while the overload mechanism is being used for motor protection.

Another feature of the controls is the independent adjustment of cut-in and cut-out settings.

Controls with overload protection are provided with a shrouded "on" and "off" button for convenience in starting and stopping the refrigeration equipment.

The button automatically moves to the "off" position when the overload unit trips. Pushing it back "on" resets the overload, the same action used in starting the equipment after the button has been pulled out to the "off" position.

Hussmann - Ligonier Starts Construction on New Office Building

ST. LOUIS—Ground has been broken for the new 10,000-sq. ft. two-story administration building which will house the offices of Hussmann-Ligonier Co., manufacturer of commercial refrigerators here.

The new \$40,000 structure to adjoin the factory will have a first-floor display room, and space on the second for executive and general offices.

Of modernistic design, fire-proof construction, and brick exterior, the building will be heated from a main plant and air-conditioned throughout.

Sales of the 30-year-old company, which maintains more than 100 distributorships throughout the country, are handled by the Allied Store Utilities Co.

Penn Switch Moves New York Office

NEW YORK CITY—Penn Electric Switch Co. has moved its New York office from 15 Laight St. to larger, better-equipped quarters at 101 Park Ave., reports Nelson B. Delavan, vice president and director of sales.

Nashville Store Fixture Co. To Handle Lipman Line

NASHVILLE, Tenn.—New distributor for Lipman commercial refrigeration equipment in this city is the Nashville Store Fixture Co. The company will also distribute the equipment in its Chattanooga branch office which operates under the name of Market Fixtures, Inc.

Taylor Freezer Sales Hit Higher Mark During Winter

BELOIT, Wis.—Sales of Taylor Freezer ice cream freezers this winter have been greater than at any other time in the company's history, officials of the organization report. The company is equipping another building to handle increased production demands.

Shipment of a carload of freezers was recently made, with the temperature 25° below zero.

Acme in Operation At New Plant

JACKSON, Mich.—Acme Industries Co. has gone into production on the line of refrigeration parts which it manufactures at its new quarters in the plant here formerly occupied by Wolcott Machine Co., reports K. A. Weatherwax, an official of the company.

Acme Industries Co., formerly known as Acme Welded Pipe & Coil Co., manufactures condensers, evaporators, liquid receivers, and evaporator headers for the electric refrigeration trade.

According to Mr. Weatherwax, the new plant gives the company 30 per cent more floor space than that in the plant which was formerly occupied by the company.

Freon Machine Installed In Houston Dairy

HOUSTON, Tex.—The purchase of a 3-hp. Freon refrigerating system with York milk cooling and pasteurizing equipment has enabled the Maenza Dairy, a small plant here, to sell its own milk production, pasteurized and bottled in accordance with city health codes.

Mechanical equipment for the dairy's operation includes a 442-FW Freon condensing unit, 450 ft. of $\frac{1}{2}$ -inch copper tubing for cooling a dry storage compartment for 32 milk crates, a brine cooler, milk cooler, bottle filler, milk pump, brine pump, 100-gal. "Low Boy" pasteurizer, 5-hp. boiler and injector, and the necessary controls and fittings.

Maximum gallonage to be cooled is 200 gal. per day. A small ice-making system freezes 200 lbs. of ice a day in four 50-lb. cans.

The equipment was sold by F. E. Turner, commercial salesman of York Ice Machinery Corp.'s Houston branch.

Tiny Cream Cooler Called Smallest Commercial Unit

ROANOKE, Va.—A midget cream cooler, a foot square and a foot high, has been claimed by the installing company, Pugh and Whitescarver, York distributor here, to be the "world's smallest commercial refrigerator."

Built of Monel metal, the "midget" has one inch of corkboard insulation and a copper sheet lining. It is cooled by 12 feet of $\frac{1}{2}$ -inch copper tubing into which refrigerant is metered by an expansion valve. No water bath is used.

The box has a .53-cu. ft. content. Cost was \$65 complete.

Birdseye Orders 20 Quick Freezers for Handling Pea Crop

BOSTON—As part of its plan to expand its operation on quick frozen peas during 1936, Birdseye Laboratories of General Foods Corp. recently ordered 20 refrigerating systems and accessories for quick freezing work from the Boston office of York Ice Machinery Corp.

The equipment will be used with Birdseye portable frosters which are transported from one harvesting field to another to freeze crops of peas. The portable frosters can be transported by truck.

The Birdseye system is a multi-plate process in which the food, in either packages or bulk, is frozen between parallel sets of refrigerated plates. In the portable froster, the plates are separable to receive the food to be frozen, and are equipped with an arrangement for applying hydraulic pressure to the foods during freezing.

The new portable units are six station frosters, employing seven aluminum plates refrigerated by direct expansion ammonia and providing six levels in which to freeze foods. Mounted below the freezers in the same structure is the special 4-cylinder York compressor and electric motor drive.

Frosted Foods is said to have packed 1,000,000 lbs. of quick frozen peas in 1934, 3,000,000 lbs. in 1935, and expects to pack about 8,000,000 lbs. in 1936.

McCray Equipment Used In Texas Dormitory

SAN ANTONIO, Tex.—Three specially-built McCray refrigerators have been installed in the women's dormitory at the University of Texas here. Sale of the equipment was made by A. J. Levinson of General Hotel Supply Co., local McCray distributor.

The installation consists of a special salad refrigerator, 8 ft. 3 in. wide, 3 ft. 10 in. deep, and 7 ft. 5 in. high; a meat and vegetable refrigerator 13 ft. 6 in. wide, 3 ft. 7 in. deep, and 7 ft. 10 in. high; and a baker's refrigerator 6 ft. 8 in. wide, 3 ft. 4 in. deep, and 8 ft. 3 in. high.

All of the refrigerators have extra-heavy walls, 7 in. thick. Exterior front is of oak, and interiors, including system, shelves, and meat racks, are of stainless steel. All the jobs will be built-in.

Cold Room Tests Used to Improve Car Performance

DETROIT—Experiments performed with the help of artificial refrigeration are given credit for greater car efficiency in cold weather by Chief Engineer George B. Allen of the Dodge division of the Chrysler Corp.

"The promptness with which certain cars get into motion even after standing long periods in open lots and at street curbs is chiefly due to manufacturer's research and development work which is checked in artificially refrigerated laboratories," he reports.

"The lessons derived from such cold room runs, applied to power delivery, fuel economy, starting, and other details of engine performance result in a power plant that goes into action immediately and continues to function efficiently in mid-winter."

WHEN HE'S HOT... AND TIRED... AND THIRSTY...



YOU CAN MAKE SOME

Easy Profits

There is money to be made in electric water coolers during the next few months. When people are hot and tired, they get thirsty—and impatient at antiquated, inefficient coolers. There are going to be electric water coolers sold right in your territory; and you might as well be the one to profit. Some will likely come in unsolicited—easy sales that will drop in your lap. There will be others that will require a certain amount of selling. All these sales and profits, however, can be obtained with comparatively little effort—far less than other types of refrigerating equipment—due to the inexpensiveness of Cordley equipment, as well as the recognized need for pure, cool drinking water. Best of all,

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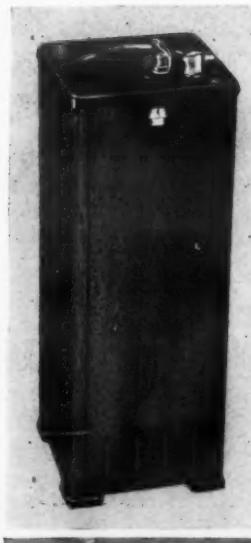
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Frigidaire Develops Water Cooler Using 'Meter Miser' Unit

DAYTON—Frigidaire Corp. put on the market recently a small, low-priced water cooler featuring the company's "meter miser" refrigeration unit.

Selling at \$115 (suggested cash, installed price in Zone 1), the new cooler is designed for compactness and low selling cost, according to Roy E. Smithson, manager of the commercial division of Frigidaire.

It is made in two types, bottle and pressure, and is cylindrical in shape and finished in a Duco bronze with black porcelain base.

The cooling unit, of the direct type, will cool one-and-a-half gallons of water from 80° to 50° each hour; it has a reservoir of a half-gallon storage capacity. A thermostatic switch with cold control permits temperature governing within the limits of health, Mr. Smithson says.

Seven-pint capacity drip-basin and receiver is of aluminum alloy to permit heavy construction combined with light weight. The cooler is also treated to prevent corrosion and is fitted with pipe connection for optional installation of a permanent drain.

Court Studies Permanency Of Refrigeration Plant In Brewery Case

NEW HAVEN, Conn.—Hearing on the equipment reclaimer petition of the Connecticut Ice Machinery Co. of Norwalk, Conn., and others, in the case of the Rex Brewing Co., this city, now in process of reorganization, has raised a difficult legal point in Federal bankruptcy court here.

A balance of \$10,977.60 is due on the refrigeration system of the brewery, which the Norwalk company, its trustee, and certain creditors seek. Attorney Joseph Weiner, appearing for the trustee of the brewery, claimed that the removal of the equipment would cause much destruction in the concrete floors and walls and that it was put in as a permanent fixture.

He argued that the amount still due should be considered a claim of some sort against the brewing company, but that while a conditional bill of sale on a permanent fixture may have been valid between the brewery and the equipment company, it was not valid insofar as the trustee of an estate operating under the Bankruptcy Act was concerned.

Bankruptcy Referee David Richman ordered briefs filed by counsel for both sides to enable him to study the point further.

Lipman Distributors Named For Three Territories

BELOIT, Wis.—Appointment of three new distributors of Lipman equipment in Missouri, Mississippi, and Texas has been announced by General Refrigeration Sales Co. here.

Lloyd H. Bondurant, Kirksville, Mo., has been given the agency in the northeastern section of Missouri.

Refrigeration Sales & Service Co., Vicksburg, Miss., will represent Lipman in the southern section of that state; and Rio Grande Fixture Co., Harlingen, Tex., in four counties adjacent to Harlingen. The latter company will also handle cases in connection with the Lipman equipment.

Brunswick to Add Soda Fountain to Line

CHICAGO—Addition of a mechanically refrigerated soda fountain to the Brunswick-Balke-Collender Co.'s line of bar equipment and beverage coolers, was announced here recently by R. F. Bensinger, president.

Several new features of convenience will be introduced in the equipment, claims Mr. Bensinger. Production of the new line will be started soon, and it will be marketed at branch offices located throughout the United States and in foreign countries.

C. J. Palmer, formerly vice president and general sales manager of the Liquid Carbonic Corp., will head this new soda fountain department.

Midwest Timmerman Co. to Sell Super-Cold Line

DUBUQUE, Iowa—Midwest Timmerman Co. here has been appointed distributor for the Super-Cold Corp. in the trading areas of Dubuque and Davenport. Otto Neuman, formerly in Wisconsin territory representing Super-Cold products, will be in charge of sales. Mr. Timmerman will concentrate on the meter plan for more business.

Four-Coil Beer Cooler Added to Temprite Line of Products

DETROIT—Temprite Products Corp. has added two new units to its line of beer-cooling equipment—a four-coil beer cooler, for use on four-and-five-tap installations, and an external water coil for use with any one of Temprite's standard beer-cooling units.

The four-coil cooler, known as Model 50-B-4, has the same external dimensions as the 50-B-3 cooler, and the beer-drawing characteristics of the coolers in Temprite's 25 series, each coil being similar to and having the same capacity as the coils in that series.

The new cooler is available for operation with sulphur dioxide, methyl chloride, or Freon as refrigerant; an oil separator is necessary when either of the last two refrigerants is used.

Capacities of the cooler, with all coils used simultaneously, range from 118 g.p.h. for sulphur, 175 for methyl, and 165 for Freon, when inlet temperature of the beer is 50° F., to 32 g.p.h. for sulphur, 41 for methyl, and 37 for Freon, when temperature of the beer is 100° F. Exit temperature in all cases is 40° F.

The external water coil makes possible separate cooling of water and beer, eliminating the necessity of using an internal beer cooling coil for this purpose as well as effecting a saving in operating cost. Use of the water coil with the 50-B-4 beer cooler makes it possible to handle four separate beer taps and a water tap on a single unit.

Addition of the external water coil may be made at an increase of \$10 in the list price of any cooler in the 25 series, and of \$12 in the new 50 series.

The coil is constructed of copper, flattened in cross sections and fitted to the shell of the cooler so that its cooling capacity is high and temperature regulation close. Interior of the coil is tin-coated, so that it may be used for seltzer water as well as for sweet water.

Capacity of the coil is approximately 8 gallons per hour, figuring a reduction in temperature from 80° to 45° F.

Stewart, Vice President Of McCray, Dies

KENDALLVILLE, Ind.—H. M. Stewart, vice president and general manager of McCray Refrigerator Co., and for 30 years associated with that company, died March 24 at Miami Beach, Fla., where he had gone to convalesce after an attack of influenza.

Apparently not fully recovered from an operation a year ago, Mr. Stewart died after an emergency operation, performed shortly after his arrival in Florida.

Funeral services were held March 27 at Berhalter Funeral Home here, with burial in Lakeview cemetery. Surviving is a daughter, Margaret, and two sons, Dale and Wayne.

Shrinkage Losses Cut by Electric Refrigeration

CHICAGO—An example of what electric refrigeration equipment can do to increase store owners' profits by reducing food shrinkage losses is shown by tests conducted recently in the Unrath Market here, where a Fedders unit cooler has been installed in the walk-in meat storage compartment.

The storage space is 9x7x8 ft. in size. Tests showed that the refrigerating equipment has maintained conditions of 38° F. and 83 per cent relative humidity, with uniform conditions in every part of the box. Shrinkage losses were also reduced to a minimum, with consequent savings to the store's operators.

The unit cooler is connected to a 1-hp. Brunner condensing unit, which also handles an 8-ft. display case. A Fedders Model 33 thermostatic expansion valve is standard equipment on the unit. Methyl chloride is the refrigerant.

Crosley Koldrink Sales Show Big Increase

CINCINNATI—Sales of Crosley Koldrink bottle coolers for the first two months of 1936 were 1148% greater than during the corresponding period of 1935, reports Neil Bauer, manager of the specialty products division of Crosley Radio Corp.

This increase, Mr. Bauer thinks, is indicative of the improved conditions in the resort, restaurant, and refreshment business, which is said to be nearer the 1929 level than any other business.

The advertisement features a central image of a tall, rectangular four-coil beer cooler with a dark front panel and a light-colored top and side panels. Six smiling people are arranged around the cooler, each pointing to a specific feature with a speech bubble:

- "Hermetically-sealed units"
- "Protection against burnt-out motors"
- "No condenser troubles"
- "Non-clog drains"
- "Water cooled models"
- "No oil troubles"
- "Low operating cost"
- "Selective temperature control"

Below the cooler, a large, stylized text box contains the following message:

AND... AS AN "ADDED ATTRACTION"
5 YEARS PROTECTION
on the sealed-in mechanism

Nine good reasons, these, why Westinghouse water cooler sales

jumped to startling heights in the early months of this year. Prospects appreciate the amazing value offered in the Golden Jubilee models... but when you give them the sales clincher... the 5-Year Protection Plan... then they become buyers.

These outstanding features make Westinghouse water coolers an attractive line to sell, as well as to buy. They sell easier, they bring repeat sales, and they stay sold. And, the 5-Year Protection Plan protects you, as well as the buyer, against service expense on the hermetically-sealed unit.

"PARTNERSHIP SPECIAL" PLAN NOW UNDER WAY

Big campaign now under way enlists widespread Westinghouse sales organization as your partners in Water Cooler sales. "Partnership Special" puts almost a thousand Westinghouse men to work as your salesmen, to put Westinghouse coolers into industrial plants and offices, the country over.

Ride the "Partnership Special." Get "in the money" on Water Cooler sales, with Westinghouse. See the Westinghouse distributor today for complete details, or write to Westinghouse Electric & Manufacturing Company, Mansfield, Ohio.

The advertisement features the Westinghouse logo, which consists of a stylized 'W' inside a circle with the words "WESTINGHOUSE" at the top and "GOLDEN JUBILEE" at the bottom, separated by the years "1886" and "1936". Below the logo, the text reads:

Westinghouse
Golden Jubilee WATER COOLERS

Commercial Refrigeration

Code Rules Affecting Installation Of Refrigerating Machinery

(Editor's Note: The following summation of safety code provisions as set forth by municipalities to govern the installation of refrigeration equipment was prepared for inclusion in the commercial refrigeration series of the refrigeration home study course prepared by the Refrigeration and Air Conditioning Institute of Chicago. What the provisions are, and how they can be met, are explained.)

Code Rules

While dealing with multiple apartment installations we had occasion to mention rules of the safety code sponsored by the American Society of Refrigerating Engineers as these rules applied to apartment dwelling systems. In addition to those provisions, there are others applying generally to all commercial systems.

Whether you have to follow code rules wholly or in part or not at all, you should be familiar with them as representing standards of good practice and of safety precautions. In this code the systems are classified by themselves as follows:

- Class A system—Contains 1,000 lbs. or more of refrigerant.
- Class B system—Contains more than 100, but less than 1,000 lbs. of refrigerant.
- Class C system—Contains more than 20, but not more than 100 lbs.
- Class D system—Contains more than 6, but not more than 20 lbs.
- Class E system—Contains 6 lbs. or less of refrigerant.

You will find numerous mentions of "flammable" refrigerant which is defined in the code as "any refrigerant which will burn when mixed with air, such as ethyl chloride, methyl chloride, methyl formate, and the hydrocarbons." A hydrocarbon refrigerant is defined as "a refrigerant containing only hydrogen and carbon, as ethane, propane, isobutane, and butane." You also will find mention of irritant refrigerants which are defined as "any refrigerant which has an irritating effect on the eyes, nose, throat, or lungs, as ammonia and sulphur dioxide."

Here are some other definitions of which an understanding is important in this work:

"Emergency relief valve: A manually operated valve for the discharge of refrigerant in case of fire or other emergency."

"Fusible plug: A device having a predetermined temperature fusible member for the relief of pressure." This may be a pipe plug drilled with a hole which is then filled with some metal which melts at 280° F. or less.

For 100 lbs. or less of refrigerant the free opening must be 1/16 inch diameter.

"Machinery room: A separate room for the housing of any pressure imposing element, condenser, receiver, or shell type apparatus." Shell type apparatus is "a refrigerant-containing pressure vessel having tubes for the passage of a cooling or a refrigerating fluid." A pressure vessel is "any refrigerant-containing receptacle of a refrigerating system other than expansion coils, headers, and pipe connections."

"Pressure relief device: A pressure relief valve, a rupture member, a fusible plug, or other approved device for relieving pressure." A pressure relief valve is "a valve held closed by a spring or other means, which automatically relieves pressure in excess of its setting." A rupture member is "a device which will automatically rupture at a predetermined pressure."

"Pressure limiting device: A pressure responsive mechanism for automatically stopping the operation of the pressure imposing element (compressor) at a predetermined pressure."

Minimum test pressures in pounds per square inch are specified for various refrigerants as follows:

Refrigerant	Symbol	Pressure in Lbs. High Side	Pressure in Lbs. Low Side
Ammonia	NH ₃	300	125
Butane	C ₄ H ₁₀	100	50
Carbon dioxide	CO ₂	1500	750
Dichloroethylene	C ₂ HCl ₂	15	15
Dichloromethane	C ₂ HCl ₂	15	15
Ethane	C ₂ H ₆	1100	550
Ethyl chloride	C ₂ H ₅ Cl	100	50
Isobutane	C ₃ H ₈	135	100
Methyl chloride	C ₂ HCl	175	125
Methyl formate	C ₂ H ₄ O ₂	30	15
Propane	C ₃ H ₈	250	125
Sulphur dioxide	SO ₂	135	100

For other refrigerants the minimum test pressure for the high side is not less than the vapor pressure of the refrigerant at 150°, and for the low side not less than half this pressure. For Freon this pressure is 240 lbs. Every part of a refrigerating system except the pressure gauges and control mechanism is required to be constructed and assembled to withstand these test pressures.

Location of Apparatus

Commercial refrigeration, except that provided by unit systems, is required according to the code to be of the indirect type (circulating brines or water) in the following places: (All the apparatus which contains refrigerant must be confined to a machinery room) Theaters, and similar places of public assembly; exhibition and assembly halls above the first story; buildings containing wards or private rooms of hospitals; asylum dormitories; schools, except in laboratories used for teaching refrigeration; main entrances and exits of public buildings, business buildings, and factory buildings with only one exit.

Any room not separated from the above locations by an unperforated fire-resisting wall when the refrigerant is flammable or irritant. Unit systems containing irritant or flammable refrigerants are not allowed in wards or private rooms of hospitals, sleeping quarters of asylums, cell blocks or prisons, or any place where people are confined or helpless.

A commercial system using direct refrigeration may be installed in the basement, first story, top story, or on the roof with any system. With non-flammable and non-irritant refrigerants, systems installed between the

Two-Temperature System

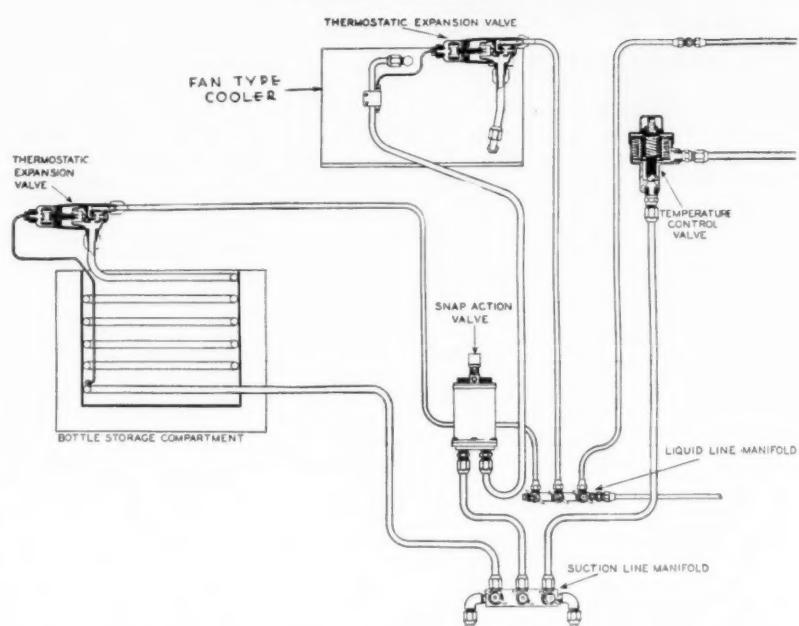


Fig. 4—Manifold and valve connections in two-temperature system.

first and top story may contain 1,000 lbs. or less of refrigerant.

If the refrigerant is flammable or irritant, and the building contains a sleeping room, systems installed between the first and top story may contain 100 lbs. or less of refrigerant according to the code, or if there is no sleeping room they may contain 200 lbs. or less. Also, with an irritant or flammable refrigerant, the entire system must be confined to the space occupied by a single tenant if the building is more than three stories high or if it contains a sleeping room.

Relief Vents

The code provides that refrigerants discharged from a relief valve (or other emergency escape) shall be handled as follows:

"Where an irritant or flammable refrigerant is used, the discharge, if to the atmosphere, must be conducted to the outside not less than 12 ft. above the grade, and not closer than 100 ft. to any opening in any building, or closer than 20 ft. to any fire escape. The discharging pipe shall be not less than the size of the relief valve outlet. The discharge from more than one relief valve may be run into a common header, the area of which shall be equal to the areas of the pipes connected to it, and the outlet of which shall be turned downward."

Where ammonia is used in a class B or C system (more than 20 but less than 1,000 lbs.) the code provides that the discharge may be into a tank of water used for no other purpose and containing at least one gallon of water for every pound of ammonia in the system. The water must be prevented from freezing without the use of salts or chemicals. The tank is to be of a depth at least twice as great as any horizontal dimension and the discharge pipe is to discharge the ammonia in the center of the tank near the bottom. Pipe connections are made only through top of tank.

Pressure relief valves are required by the code on class A and B systems (more than 100 lbs. of refrigerant) except those which use a centrifugal type "pressure imposing element"; the valve to be located on high side between compressor and main stop valve to relieve excessive pressure into low side of system or else to atmosphere.

Relief valves are also required on A, B, and C systems (more than 20 lbs. of refrigerant) for shell type apparatus such as receivers, condensers, evaporators, separators, and absorbers which can be shut off by stop valves. With a system in which the high pressure is relieved into the low side, a relief valve must also be provided for the low side of the system, and this valve must be vented to the atmosphere according to the method already described.

On class A and B systems (more than 100 lbs.) which normally operate above atmospheric pressure, a hand operated relief valve is required to allow discharge of refrigerant from high side in case of fire. This valve is to be placed in machinery room or is to be controlled from outside.

For systems containing less than 100 lbs. of refrigerant (everything smaller than class A) there is re-

quired one relief valve of 1/2-in. size. Systems containing more refrigerant are fitted with larger valves, up to 20-in. size, and for the largest systems are fitted with two valves of larger size.

Machinery Room

The code requires that a machinery room must house the compressor, condenser, receivers and any shell type apparatus of commercial systems using flammable or irritant refrigerants under the following conditions: when there is more than 50 pounds of refrigerant between the first and top stories; when there is more than 100 pounds of refrigerant in systems between first and top stories of business buildings; and when there is more than 500 pounds of refrigerant of any system in the basement, first story or top story.

No fire, flame, or arc lamp is allowed when using flammable refrigerant in a machinery room if the system contains more than 20 pounds of refrigerant.

When the system contains more than 100 pounds of flammable refrigerant the machinery room must not contain any major electrical equipment other than motors and switchboards required to operate the refrigerating machines.

Starting equipment, such as switches and automatic starters, must be totally enclosed or oil immersed. There must also be an emergency switch controlling all the electrically operated refrigerating machinery and located outside the machinery room so it can be easily reached and operated in case of emergency. Such a switch located inside the machinery room may be provided with a remote control for outside operation.

No connection may be made for any part of a refrigerating system to a public water supply which may impair the purity of the water. The water used in water cooled condensers must not be returned to any supply which may be used for drinking purposes.

Another code requirement specifies that "a gas helmet or mask suited to the refrigerant used shall be provided with every class A and B system that operates above atmospheric pressure (carbon dioxide systems excepted)." The helmet or mask must be of a type approved by the United States Bureau of Mines for the refrigerant employed, it must be inspected once a year, maintained in operative condition, and kept in an easily accessible cabinet or case.

"GENUINE DETROIT"
HEATING, REFRIGERATING AND
AIR CONDITIONING CONTROLS

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- (1) More than 1500 Coils for Walk-in Coolers, (2) Three types of Unit Coolers, (3) "AIRLATOR" Drip-Pan Coils, (4) More than 2700 Display Case Coils, (5) Complete Listings of Small Box Coils, (6) Sheet Coils, (7) Commercial Ice Cube Makers, (8) Bottle Cooling Coils, (9) Air and Water Cooled Condensers, (10) Domestic Ice Cube Makers.

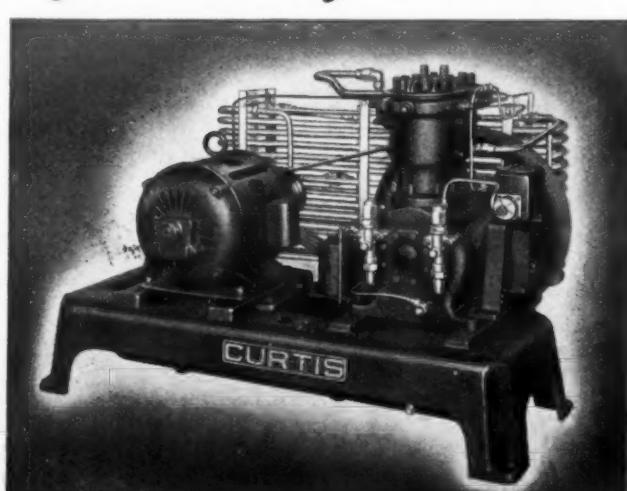
TRENTON AUTO RADIATOR WORKS
Main Offices and Factory, TRENTON, NEW JERSEY
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CURTIS REFRIGERATION Units to fit every need

Curtis, one of the oldest compressor manufacturers, offers an unusually complete line of refrigerating units—1/6 to 2 H.P. air cooled; 1/3 to 15 tons water cooled—reflecting 82 years of successful engineering, designing and manufacturing experience. Some desirable territories are still open for reliable distributors.

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WATER COOLERS
COMMERCIAL — AIR CONDITIONING
From 2 gals. per hour to 500 gals. per minute
WATER FILTERS — STEEL PIPE COILS
FILTRINE MFG. CO., Brooklyn, N. Y.

Summer Lay-Offs Eliminated in Distillery By Installation of Water-Cooling System

STAMPING GROUND, Ky.—Summer lay-offs in the making of Kentucky's bourbon whiskey have been averted by Buffalo Springs Distillery Co. here with the installation of a Frick cooling system.

In previous years, distilleries relying on spring waters carrying lime-stone and phosphate qualities were forced to close during summer months because of lack of temperature control in their cooling water.

Built on the site of the Old Buffalo Springs Distillery established in 1868, the new distillery, constructed of native limestone, is supposed to be located in the valley once used as a stamping ground by vast herds of buffaloes which came to drink from the two great springs that converge at that point.

In the new plant, a modern cooling system permits temperature regulation in the vats where the back-set and mash are mixed, and controls the temperature throughout the fermentation period.

Before the back-set and mash enter these fermenting vats, they are cooled by passing through double pipe coolers arranged in sections. The first section removes the initial heat, and the final cooling is accomplished through a 500 ft. section through which is circulated approximately 80 gals. per minute of 40 to 45° F. refrigerated water.

Same Coolers Used for Both

Cooling of mash and back-set are done intermittently using the same coolers, the back-set at a rate of approximately 65 g.p.m., and the mash at 100 g.p.m., both through a range of from 20 to 25° F.

The refrigerated water is taken from the storage tank by a plunger pump, passed through the yeast tubs,

where the water temperature is raised 2°, and from the yeast tubs through the double pipe coolers, then back over the zig-zag water cooler to the storage tank. Provision is made for circulating a portion of the cold water through a cooler for whiskies, lowering its temperature from 65 to 55° F.

An 8 by 8 Frick ammonia machine, driven at 350 r.p.m. by a 75 hp. motor, and using a v-belt drive; two 16-in. MS condensers, receiver, oil trap, and instant water cooler, and interconnections comprise the water-cooling equipment.

Cooler in Insulated Room

The condenser and zig-zag cooler are located above the 15,000 gal. cold water storage tank, the cooler being placed within a cork-wall insulated room to the left of the condensers. The condenser and ice water pumps are on the ground floor of the still house.

Protected on all sides with walls of thick stone construction, the fermenting room is partly below ground level. The roof is insulated and equipped with a number of adjustable skylights, as well as with spray nozzles for supplying water at approximately 70° over the entire surface, including the skylights.

An exhaust fan, placed in one end of the room, changes the air every eight minutes. Fresh air enters through the sprays over the openings in the skylights. This method of air circulation is said to give a washed, cool, clean, fresh air supply, making a cooler and "sweeter" fermenting room.

Cold water is essential in a distillery for a good yield from the grain; its use controls fermentation and preserves the aroma and flavor of the whiskey.

Canton Market Installs Complete Modern Refrigeration System in New Store

CANTON, Ohio—A complete installation of market refrigeration equipment has been made in the new store opened here recently by Kobacker's, operator of a chain of department stores in 14 cities of Ohio, Michigan, New York, and Indiana. The store is located in the middle of Canton's business district.

Equipment was supplied by Canton Hardware Co., distributor for York Ice Machinery Corp. in this territory. The market is located in the basement of the store, and has the following departments: meat, dairy, fish, fruit and vegetable, groceries, bakery, lunch counter, and delicatessen.

Specially-built Chrysler & Koppin display cases, trimmed in cream and green porcelain and modern in appearance, are located throughout the store. Back walls of the store are trimmed in white porcelain to a height of seven feet.

Retailing equipment consists of 46 feet of single-duty meat cases, 14 feet of fish cases, 12 feet of delicatessen cases, an 8x8 ft. dairy box and an 8x10 ft. vegetable cooler, an 8x10 ft. fish cooler, a 12x16 ft. meat cooler, a buttermilk dispenser, and a liquid carbonic soda fountain.

Tubing Kept to Minimum

Because the floor of the market is terrazzo, with no basement below, a principal consideration was placing the refrigerating units so that a minimum of refrigerant tubing was required.

This was accomplished by installing a York 2-hp. unit for the meat and display cases, dairy box, and buttermilk dispenser, a 1-hp. unit for the vegetable and fish coolers, a 1½-hp. unit for the meat cooler and fish case, and a ¾-hp. unit for the delicatessen case. All but the delicatessen unit are water-cooled.

Refrigerant tubing was run inside

1½ to 2 inch flexible steel tubing, laid in the concrete base of the terrazzo. The system was designed to avoid the necessity of two-temperature controls.

Fans on the forced-convection units are operated by thermostats which can be regulated to suit special needs. In addition, the fans have a variable pitch blade which permits a variation of temperature conditions without changing the pressure control on the condensing unit.

Condenser Does Double Duty

For instance, the fish and vegetable coolers are both on one condenser. Usage is not heavy in the fish cooler, so the fan is set for a minimum velocity with continuous operation, producing a temperature of 33 to 34° F. The vegetable cooler, where usage is comparatively heavy, has its fan set for a higher velocity, with a thermostat regulating the fan operation to keep a temperature of 37 or 38° F.

In the dairy case, which is a 20-foot double-duty fixture with a center partition dividing it into two 10-foot sections, one of the top display sections is devoted to cheese. Adequate refrigeration, with a high humidity, was provided for this section simply by eliminating the overhead coil and arranging for the finned coil below to furnish refrigeration. The other section, used for butter and milk, has coils both above and below.

Operating on the same condensing unit with the dairy case is the buttermilk dispenser, a square case installed alongside the dairy case. This is cooled by a flat copper tubing coil soldered to the inner liner, and sealed in an insulated housing finished with composition tile.

The installation work on the market was handled by Barnaby Refrigerator Service Co., a firm which has done much of Canton Hardware Co.'s installation work for several years.

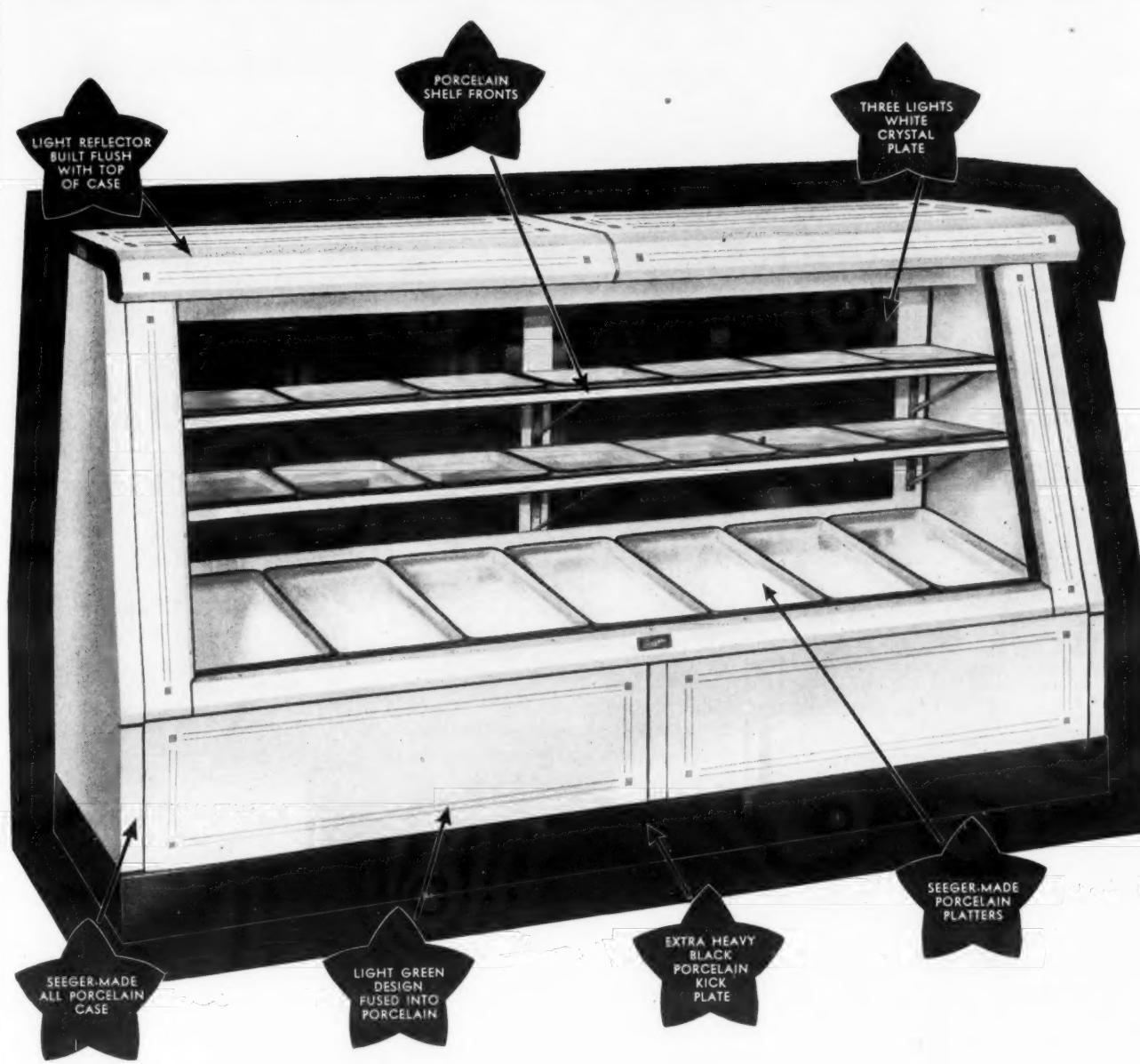
General Electric Equipment Installed at West Point

WEST POINT, N. Y.—General Electric conditioned-air refrigeration equipment was recently installed in the U. S. Military Academy here.

Condensing units include two CMF-8's, one CMF-8W, and two CMF-4W's.

Lipman Names Distributor In Richmond, Va.

RICHMOND, Va.—General Refrigeration Service Co., 1647 West Broad St. here, has been appointed distributor for Lipman commercial refrigeration and air-conditioning equipment in the Richmond territory.



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APRIL 1, 1936

Foreign Trade

ON January 8, Editor George F. Taubeneck made an appearance before a thousand or more refrigeration men attending the Kelvinator distributors meeting at the Wilson theater in Detroit. That event marked the official start of his trip around the world. In each issue since that date the editor has reported his experiences and westward progress. His story about Hawaii in this issue (continued from last week) is the thirteenth instalment of the series.

Letters which have come in recently indicate that readers in the United States are beginning to get "warmed up" to the idea of seeing the world through the editor's eyes. We have learned from publishing experience that repetition and continuity are essential factors in the successful promotion of an idea. Advertising men believe that there is something significant in the "cycle of thirteen." It seems to require such a program, on the average, to get a definite psychological effect.

By this time, no doubt, readers of the News have sensed the fact that some thought was given to advance plans for the editor's trip. As the story unfolds during the coming weeks, it should become more evident that the trip was planned with a purpose. The first objective is obviously that of promoting increased interest in the foreign trade possibilities of the refrigeration and air-conditioning industries.

In undertaking this service to subscribers and advertisers, we hope that the "increased interest" will work both ways: (1) stimulation of activity on the part of distributors in numerous important trade centers around the world by making available to them, directly and personally, frankly and freely, unbiased information about the products and facilities of American manufacturers, and (2) a better understanding of foreign trade problems and market opportunities through the presentation of vivid descriptions of the countries and peoples, intimate stories about the personalities, and information about distributing organizations and market conditions in the various countries.

The reports received from Mr. Taubeneck indicate that readers in other countries along the route of his journey have caught the spirit of the plan in marvelous fashion. Thanks to California leaders who set the pace with their hospitality, the editor is getting exceptional attentions at every port of call. Considering the limited time available at each stop,

it is a tremendous advantage to him to be able to meet so many representatives of the industry in each locality.

For example, Mr. Taubeneck's schedule permitted only a one-day stop-over in Auckland, New Zealand, but every hour was made memorable, and effective in news gathering, because of the many courtesies shown. In a brief note mailed before the ship sailed, he reports:

"Was welcomed by His Worship the Mayor of Auckland, Mr. Ernest Davis, who dined me, took me aboard his yacht, and presented me with an inscribed book. Given lunch by the refrigeration group. Also met Publisher Brett of the *Auckland Star*, and was interviewed by that paper. Could I have stayed another day, Mayor Davis would have sent me in his plane to the scenic Rotorua district."

After reading the stories about Hawaii in last week's issue and this, we feel sure that a great many readers will have a new and different mental picture of that U. S. territory and the U. S. citizens who inhabit it. We have an idea that some manufacturing executives who have been thinking of those islands as dots on a map, will take a new interest in that market. The servicing problems and the methods of handling them, may be news to some of the engineers and production men. California jobbers may be surprised to know how much replacement parts business has been going to Chicago. Several companies should be interested in the distributorship vacancy reported this week.

But the story is just beginning to "get good." Reports from Samoa, Fiji, and New Zealand arrived a few days ago and we can assure you that you will find some interesting reading in the coming issues.

We are looking forward with special interest to the reports from Australia and Java, where the editor has been visiting during March, because we have had the pleasure of meeting several refrigeration men from those countries and because we have already learned something about their industry activities. Encouraging is a letter just received from F. C. Lovelock, Ltd., refrigeration jobber and agent for the News in Sydney, stating that they expect to send in at least 100 new subscriptions from Australian concerns.

Mr. Taubeneck was scheduled to arrive in Singapore last Friday but as we go to press an expected cable message has not come in. Our interest in the Straits Settlements as a refrigeration market has been accentuated lately by a report issued from the U. S. Dept. of Commerce. *Electrical Foreign Trade Notes*, dated March 15, 1936, contains the following information about sales for the first 9 months of 1935:

"Electric refrigerators have shown astounding increases and although separate classification is not given by the Statistics Department on the situation, judging from the daily import sheets of the Singapore Chamber of Commerce, practically 1,500 electric refrigerators have come into Singapore from the United States so far this year, and it is quite probable that another 150 or 200 have entered Malaya by way of Penang and Port Swettenham."

What foreign trade means to the manufacturer, and to a business paper, was brought out clearly in a recent statement by George A. Hughes, president of the Edison General Electric Appliance Co. Referring to the expenditure of \$20,000,000 for advertising Hotpoint products in the past 25 years, he said:

"Looking back over the years, I believe that we might have spent even more to advantage. We started in the trade press, which was an important factor in our success. In fact, the foreign business alone which we received as the result of our advertising in business papers paid for the space several times over."

Letters

Confusion of Names

Utilities Engineering Institute
404 N. Wells St., Chicago

March 28, 1936.

Editor:

Relative to your editorial and supplementary articles in the March 25, 1936, issue of the News on the subject of Trade Schools, we would like your readers to understand that there is no connection between Utilities Engineering Institute, established 1927, and Utilities Instruction Laboratories of Philadelphia, or for that matter with any other school of similar sounding name.

Much confusion and misunderstanding has occurred in view of the seemingly common practice of new school promotions to style their name with close similarity to that of this pioneer refrigeration training organization.

E. P. SORENSEN, President.

Urge Investigation of Refrigeration Schools

Detroit School of Refrigeration
6517 Grand River, Detroit, Mich.

March 28, 1936.

Mr. Cockrell:

I was very interested in your discussion on refrigeration schools and, since you invited comment, I should like to put my oar in.

I'm in the school business (not racket) myself, as you may know. I have considered the subjects of refrigeration and air conditioning which we teach highly technical and, consequently, not capable of being taught thoroughly by correspondence methods. I still think so. Nevertheless, we are contemplating a correspondence course. Ask me why and I'll tell you. In fact, I'll tell you anyway.

In the first place, I didn't go into the business to make a mint of money. I've never paid an income tax and don't expect to for some time. For a year we didn't make much money, but we had lots of fun fixing up what we believe is the most complete laboratory devoted exclusively to instruction purposes in the country. We still don't make much money and the fun begins to lose its mirth. If it wasn't for some commercial test work and some consulting, it might be difficult to pay all our expenses.

We have classes starting every month consisting of men from fourth grade education to graduate mechanical and electrical engineers. If we had double the number of students per month, we could get along nicely. We are equipped to take care of them, but enrollments are not as brisk as they should be. We don't use high pressure selling. I won't stand for it. We don't have a fictitious advisory board consisting of people who have answered our letters. We don't invite members of the industry to have a good time once a month or so so that we can claim we are training men the way the manufacturers want them trained and that men from the large manufacturers are directors of our school. We simply give a good course and stand on our own feet.

Our students are more than satisfied. We don't promise jobs. The State Board of Industrial Education which licenses us wouldn't allow us to and we are not selling jobs anyway. However, we have helped our men get jobs in refrigeration factories, engineering laboratories, refrigeration service, and in air-conditioning sales, but we promise nothing.

So what? We get by, but that is all on our local business. So we advertise in E.R.N. and R.S.E. and we get lots of out-of-state inquiries but no enrollments. They come as far as from Palestine and Belgium. So what? So we contemplate methods of getting out-of-town business. We are, therefore, contemplating correspondence instruction. Not that we think it is adequate, but because there is a demand for it and, if we don't give it, somebody else will and from what we have seen we are convinced we can do a better job than the other fellows are even trying to do. We are going to push our resident course as we believe it is the best way to teach. As a second choice we shall try a combination of correspondence and one month of concentrated laboratory work. For those who can't possibly come here we shall offer a correspondence course only as a last resort. That in a large cocoanut shell is our situation.

But to get back to your case. Why not give the public a break and really go into an investigation of schools? Why not have an unbiased observer investigate each of the schools, their equipment, their courses, their instruction staff, and their records with the various branches of the Better Business Bureau? Why not rate them as to instruction material, method of instruction, etc.? The reputation of the good schools is dragged down constantly by the racket schools and they

would welcome the investigation and the racket schools not desiring to be investigated could simply be listed as not desiring to be investigated.

Once again I invite you to come in to see us at any time and any of your representatives is invited to sit in with one or any of our lecture classes and to see the boys at work in the laboratory.

GEO. H. CLARK,
Director.

A Prospect in Austria

(Translation of letter from Gustav Steurer, Gosting, Austria.)

March 27, 1936.

I would like to know the subscription rate for your paper for 6 months and the full year and would also like to see a sample copy.

I would also like to have the names of manufacturers of large American made refrigerators and the prices of same.

I am interested in automatic refrigeration 1/4 PS—4 PS for air and water cooling. I do not want Frigidaire and Kelvinator as they have representation here in Austria, but I do want companies such as Universal Cooler, Copeland, Baker, Parker, Brunner, Fedders, etc.

I am interested in those firms which already do business through Austrian banks or exchange firms.

May I please have an early reply.

GUSTAV STEURER,
Gosting, Austria.

A Welcome from Leipzig

(Translation of letter from Elektro Kuhlanlagen GmbH., Gorringstrasse 35, Bohlitz-Ehrenberg bei Leipzig, Germany.)

March 13, 1936.

We received your letter of Nov. 29, 1935, answer to which has been delayed due to misplacement of your letter caused by the changes which took place in our organization. We wish to call your special attention to these changes as indicated by our letterhead.

With great interest we note from your letter that your editor-in-chief, Mr. George F. Taubeneck, intends to call on us and get acquainted with our factory program during his trip around the world.

We do not want to miss giving Mr. Taubeneck a hearty welcome and ask that you advise us the exact date he is expected to arrive here.

Montgomery Ward Orders

724 E. 71st Terrace
Kansas City, Mo.

Editor:

I am an electric refrigerator salesman and as the new 1936 season is here I am trying to inform myself on the features of as many refrigerators of the popular makes as possible.

The other day I was informed by one of the salesmen for the Frigidaire Distributor, that the Frigidaire people will be making the unit for Montgomery Ward's 1936 electric refrigerator. Enclosed you will find stamped self-addressed envelope and I am wondering if you would be kind enough to inform me if this is an actual fact that the Frigidaire company is making the unit in the 1936 model Montgomery Ward refrigerator. Thanking you in advance for this information.

JAMES T. ALLEN.

P.S. Would you please send me the date of issue of the ELECTRIC REFRIGERATION NEWS that will contain the specifications of the 1936 models as I will want to order one later.

Answer: We understand that Montgomery Ward's order for production of their 1936 line was split between Frigidaire and Universal Cooler Corp., each company getting about half of the business. Two other manufacturers will make the cabinets.

Servicing All Makes Over

A 75-Mile Radius

J. L. Driskell
236 North Almo, Burley, Idaho

Gentlemen:

I wish to thank you for registering my name in your "Catalog Mailing Service."

In regards to my experience in the servicing of refrigerators I started to work in a creamery in 1925, having followed mechanical work all my life and I naturally took an interest in the ammonia plant. Since that time I have been connected with the industry in some form. I have had some work in the University of Idaho, and spent 30 days at the Copeland factory in 1932.

I service ammonia systems, household and commercial systems of all makes, I also service Maytag washers and stokers which we sell through the Paulson Jewelry Co.

Our service charges \$1.50 per hour and 5 cents per mile for mileage. The mileage is quite an item here as we sell, deliver, and service within a radius of 75 miles from Burley, Idaho. We buy our Copeland supplies from Detroit, tubing from Wolverine at Detroit, Frigidaire parts from Salt Lake City, Escoo and Arctic from Denver Fire Clay, Salt Lake and Denver, and the balance from Refrigeration Service, Los Angeles. J. L. DRISKELL.

Interesting Details about The Pittsburgh Flood

Kerotest Manufacturing Company
2525 Liberty Avenue
Pittsburgh, Pa.
March 27, 1936.

Mr. F. M. Cockrell:

This morning we received a letter from our mutual friend, Mr. A. K. Scribner, Assistant Manager of Virginia Smelting Company, asking us about the damages sustained in the Pittsburgh flood. We think perhaps you may be interested in our description of conditions as they approached the critical stage and passed that point, and we enclose a copy.

Perhaps it may be of benefit to Kerotest if a news item were included in your next issue, to the effect that we suffered no serious loss of life or property and are rapidly restoring production and deliveries to normal. Immediately upon getting access to our offices we notified all customers for whom we had open orders on our books, that we were again operating and would catch up as fast as possible.

J. S. FORBES, Treasurer.

Kerotest Manufacturing Company
March 27, 1936.

Mr. A. K. Scribner,
The Virginia Smelting Co.,
West Norfolk, Va.

It was very considerate and thoughtful of you to write and express concern about how the flood conditions affected us here in Pittsburgh. As you doubtless have read, there was comparatively small loss of life and that principally down around the river banks. On Tuesday night, March 17th, we had a severe sleet and snow storm, and reports were received over the radio that the rivers were rising quite rapidly. Our flood stage in the Pittsburgh district is 25.7 ft. and they feared that the waters would get that high. By 8 o'clock Wednesday morning the depth was 32 ft., and by 9 o'clock Wednesday night it had reached 45.9 ft. Our pumping stations failed and water was delivered for drinking and culinary purposes in renovated gasoline trucks, new garbage cans, etc., and a bucket allowed each home in the district.

Of course, simultaneously with the shut-off of water the power lines failed, and there was a mad rush for flash lights, candles, kerosene lamps, etc., and prices soared from 5 cents per candle on Wednesday morning to as high as 50 cents by Thursday night. Gasoline was distributed by means of hand pumps since most all of the gasoline dispensing machines are electrically operated, and it too jumped from approximately 18 cents to 50 cents per gallon.

Our food markets were cleaned out, not because of any shortage but because of a panicky fear that there would be a shortage.

Transportation on street car lines, railroads, and etc., was paralyzed and auto traffic was directed where it pleased the military and police authorities. Row boats were obtained from as far away as Lake Erie, and frequently people rowed over abandoned automobiles without knowledge of their presence underneath, so deep was the water.

Joseph Horne Company, one of our largest and best department stores had 13 ft. of water on the first floor and suffered a loss of about \$1,500,000.

As far as Kerotest is concerned, the plant runs from 25th to 26th Sts. and back from Liberty Avenue to an alley called Strawberry Way. The water rose to 25th St. in one direction and to 26th St. in the other direction, and back to the alley, but did not reach the floor of our shops. None of our employees were injured or became sick, and no monetary loss was suffered except through the confusion, high prices, and complete cessation of business and the money spent in moving materials about to raise them above the level of the first floor. We could not get to the shop from Wednesday to Friday inclusive, but opened up for normal business on Monday morning, March 23rd, and are now working day and night in an effort to catch up on production and delayed deliveries. Pure water and power had been restored as early as Sunday, March 22nd, and while traffic conditions are far from normal, with limited street car and railroad service, we are gradually making progress.

Now the question presents itself as to what we are going to do as a city and people in Western Pennsylvania to prevent repetition.

J. S. FORBES, Treasurer.

Grant Electric Co.
120 W. Freemason St.
Norfolk, Va.

Editor:
Please mail us at once 10 copies of your issue of March 4 and bill us for same.

PUBLIC UTILITIES PLAN NEW METHODS OF BUILDING APPLIANCE SALES

Progress of Kitchen Modernization Bureau Campaign Reported to Sales Conference

(Concluded from Page 1, Column 2)
previous day, manufacturers' representatives present had pledged full support for the program. Mr. Whitwell indicated that the program will be pushed ahead on a big scale this year, and may be extended into the next year.

At the committee meeting Arthur Grove of Edison General Electric Appliance Corp. delivered a report on the publicity and advertising material that has been prepared by the Bureau. No national magazine advertising will be used this year, but a great many helps for local promotions (which have been described in previous issues of the News) have been prepared. Most of the manufacturers cooperating have pledged to use the Kitchen Bureau emblem in their advertising.

The plan committee decided to make the contest for dealers on kitchen planning a local activity, instead of national one, and requested local utilities to sponsor such contests.

Manufacturers were represented at the committee meeting as follows:

P. B. Zimmerman, General Electric Co.; H. W. Burritt, Kelvinator Corp.; J. J. Walker, Jr., Frigidaire Corp.; P. Y. Danley, Westinghouse Electric & Mfg. Co.; S. D. Mahan, Westinghouse Electric & Mfg. Co.; Reese Mills, Westinghouse Electric & Mfg. Co.; R. B. Marshall, Electromaster, Inc.; C. H. Guy, Westinghouse Electric & Mfg. Co.; A. L. Smith, Walker & Pratt Co.; W. T. Christy, Edison General Electric Appliance Corp.; H. J. Mauger, Edison General Electric Appliance Corp.; C. E. Swartzbaugh,

Swartzbaugh Mfg. Co.; B. W. Clark, Westinghouse Electric Supply Co.; I. W. Clark, Westinghouse Electric & Mfg. Co.

Others at the committee meeting included:

G. E. Whitwell and P. M. Alden, Philadelphia Electric Co.; W. G. Keay, New England Gas & Electric Association; C. L. Harold, Brooklyn Edison Co.; G. J. Reichert, Buffalo, Niagara & Eastern Power Co.; E. W. Lloyd and Oliver Hogue, Commonwealth Edison Co., Chicago; W. L. Berry, Union Electric Light & Power Co., St. Louis; L. A. Lewis, Nash Water Power Co., Spokane, Wash.; A. E. Ward, Utility Management Corp., New York; D. M. DeBard, Stone & Webster, New York; M. E. Skinner, Niagara Hudson Power Co.; J. F. Becker, New York Edison Co.; C. A. Collier, Georgia Power Co.; C. G. Neff, Southern Ohio Electric Co.; C. A. Nash, United Light & Power Co., Chicago; A. B. Collins, Alabama Power Co.; E. A. Holmberg, Brooklyn Edison Co.; Florence Freer, Brooklyn Edison Co.; A. A. Brown, Oklahoma Gas & Electric Co.; H. P. Megargee, Associated Gas & Electric Co.; G. W. Thomas, Public Service Co. of Colorado.

R. R. Rau, National Retail Furniture Association; H. B. Sheets, National Retail Hardware Association; C. E. Greenwood, Edison Electric Institute; W. H. Hodge, Bylesby Management Corp.; W. E. Underwood, Tracy, Locke & Dawson Advertising Agency; O. C. Small, National Electrical Manufacturers Association; E. E. Romine, Bozell & Jacobs, Omaha.

Utilities Can Stop Agitation About Merchandising By Promotional Campaigns, Allison Says

Urging power companies to take the lead in the promotion of electrical appliance sales in their particular communities, Dr. G. W. Allison, field representative for the Kitchen Modernizing Bureau, declared that where such steps have been taken the attitude of other factors in the industry toward utilities had undergone an about-face.

"In St. Louis this year \$365,000 will be spent on an electric range campaign, and the utility is in this program to the hilt," cited Dr. Allison.

"Where in Missouri there was previously much agitation against utility merchandising, the situation is now reversed. Just last year a carload of electrical dealers from St. Louis went to the Missouri state capital to stop legislation that would have put utilities out of merchandising."

With further reference to what utilities could do locally, Dr. Allison cautioned against attempts at too much domination of the local situation by any national plan or interests.

While utilities in many parts of the country have changed the attitude of dealers toward them, they haven't accomplished much in altering the attitude of the public towards themselves, said Dr. Allison.

"Antagonism of the public is a barrier to progress," he averred. "People criticize utilities and talk about rates without having any of the facts. And the utility is at fault for not making the facts available."

"The light bill is merely an irritant to the customer. He has no realization of the value he has received for his money."

"Electric service needs much care and thought in its interpretation to the public. When a man is having a party he can't bring home an extra bucket of kilowatts—some tangible thing—to make his party a success, but the electric service which is always available probably goes more towards making such a party possible and successful than any 'tangible' item he might have brought home."

Wilson Tells Utilities To Dramatize Their Service to User

Dramatization of their services to the user in the terms of the comfort and convenience that service provides him is a new sales approach which the utilities might use to the greatest advantage, declared C. E. Wilson, vice president of the General Electric Co. in charge of all appliance activities.

"Utilities should give more thought to keeping the public conscious of the service they are getting at so reasonable a cost," Mr. Wilson went on to explain.

"The recent floods demonstrated in a vivid manner the importance of electrical service. When the power plants went out of commission merchants couldn't sell their wares, industry was paralyzed, and the ordinary citizen suffered all manner of discomfort."

"Still, the purveyors of this service which means so much to our modern living are the victims of an unfriendly attitude on the part of the general public."

The public, pointed out Mr. Wilson, thinks of the utility only when the bill for the service is presented, and consequently the only reaction is: "this is costing me too much." No effort has been made to impress upon him the broad and indispensable service he is getting for a relatively small fee.

"Such service is thus put in the cold terms of kilowatt hours, and dollars and cents, imprinted on a piece of paper," said Mr. Wilson. "Utilities can easily dramatize the

story of their service, taking each everyday use of electricity and telling what it means to human health and comfort."

"Sell the certainty of electrical service, its uniformity, and the consequences of this service."

Mr. Wilson cited the example of the automobile industry to show how a manufacturer of a product and a manufacturer of the "power" that makes the product operate cooperate to put the emphasis on comfort and convenience in selling the product and its motivating power to the public.

"Tell the story of your service as that intangible which 'iced last night's cocktail, made yesterday's frozen dessert, and cooked last Sunday's roast,'" was the parting thought Mr. Wilson gave to the sales executives.

Steinmetz Explains 1936 Housewares Program

The "Electrical Housewares" program (promotion of small appliances), which was successfully carried out during 1935, will be continued on an even larger scale this year, reported H. P. J. Steinmetz of the Public Service Electric and Gas Co. of New Jersey to the sales conference.

Twelve manufacturers are contributing to this campaign, and their expenditures are being matched by the Edison Electric Institute, he stated.

Four special programs form part of the plan this year: these are (1) "National Housekeeping Month" during April; (2) "National Wedding Week" in June; (3) "National Savings Month" in October; (4) "Housewares Week" in December.

Weadock Points Out Efficient Operation Of Power Industry

Charging that some elements in the Federal government and other agencies are attempting to destroy an industry that accounts for the livelihood of more than 2½ millions of people, Bernard F. Weadock, vice president and managing director of the Edison Electric Institute, made a vigorous defense of the power industry at the formal luncheon of the third E. E. I. Annual Sales Conference.

"Utilities can show, on the average, \$1.13 in assets for every dollar invested," said Mr. Weadock. "Even during the darkest days of the depression less than 1% of utility operating company bonds were in default."

Declaring the utility industry to be the most efficiently operated and best-serving industry in the country, Mr. Weadock repudiated widespread claims that rates were high, pointing out that reductions have been made year after year, and that recently, for the first time, the national average had been sent below 5 cents per kWh.

In commenting upon the recent Supreme Court decision regarding the TVA, Mr. Weadock read parts of the decision to show that the court language did not in any way give the government the right to construct or operate power plants.

E. E. I.'s managing director also informed the utility sales executives that the industry is going to make a vigorous court fight on the use of PWA funds for the construction of municipal power plants.

The manufacturer who standardizes on Delco is assured of an adequate supply of motors at all times. And if he makes any alterations in his product which require corresponding changes in his electric motors, he knows that these changes can be quickly and easily effected. For Delco production is so flexible that it can be keyed to the individual needs of any manufacturer—just as Delco motors are designed and constructed to suit the particular requirements of the various appliances for which they are made. overshadowing all this, however, is the ruggedness and reliability of Delco motors themselves—a natural result of Delco's long engineering experience and wide production facilities—and one which is equally appreciated by dealers and manufacturers alike.

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Collier Tells How Georgia Power Maps Its Program to Sell 20,000 Refrigerators & 14,000 Ranges Each Year

By Phil B. Redeker

"It doesn't matter what kind of a program you have to build appliance sales—but have one, and back it up with as big an appropriation as you can get, and put your whole organization behind it," Charles Collier, vice president of the Georgia Power Co., told the utility sales executives.

So saying, Mr. Collier then described the Georgia Power Co. program, and the results that had been obtained.

"Two years ago," said Mr. Collier, "we set out on a program with a quota for the company's merchandise division of 20,000 electric refrigerators a year, 14,000 ranges a year, and 5,000 water heaters a year."

"We set the dealers' quota for approximately the same figure. We try to plan our sales programs so that they will be of the greatest possible help to the dealer, because we realize how important dealer sales are in building a load for our lines."

"One of the main objects of our program was to make the low-use customer a greater user of electrical energy. The low-use customer is not only a financial liability, but he is also a liability from the public relations standpoint. An examination of your records would probably show that the majority of the complaints registered with your company come from minimum bill customers."

In interpreting the results of the Georgia Power Co.'s increased sales activity, Mr. Collier explained what the results had been from several different standpoints.

"When we had been previously spending only \$3 or \$4 per customer

year on sales effort, our per-dollar-cost of new annual revenue was 78 cents.

"Now that we are spending from \$10 to \$12 per customer year on sales expense, this cost has dropped to 23 cents per dollar of new annual revenue."

"In 1927, of all the residential customers on the Georgia Power lines, 28% were in the minimum bill class. This figure has now been reduced to 11%."

"The Tennessee Power Co. (which like the Georgia Power Co. is a property of the Commonwealth & Southern Corp. and which has also expanded its sales activity) reports that where in 1934, 18% of its customers were in the minimum bill class, this figure has been reduced to 8.4%."

Mr. Collier also reported that since the program was inaugurated the annual average kwh. consumption of the Georgia Power Co. had jumped more than 200 kwh. to an annual average consumption (residential) of more than 1,000 kwh.

"What kind of a program and plan did we use?" Mr. Collier asked himself, knowing that was the question in the minds of every utility sales executive in the audience. "Why, we used every trick in the bag."

"One of our first moves was to set up an objective rate scheme, whereby a rate schedule was provided giving the customer a certain number of 'free kwh.' if he increased his use to a certain point."

Not content with this, the same town council met again and passed a

resolution decreeing that every house in the city should burn a 100-watt light on the front porch, all night every night, the council to pay for the added expense on the citizens' light bill.

In another city, declared Mr. Collier, every water bill that goes out has a sticker affixed to it telling the homeowner to help out the town by buying and using more electrical equipment.

"We ran into a situation in one city where the Women's Federation and the P. T. A. were fighting over the right to promote the 'Home Town Contest' efforts in their particular city," said Mr. Collier. "We solved this by providing an extra contest in which these two groups competed with each other in the matter of beveling customers into buying electrical devices."

Mr. Collier also commented on his company's activities in renting "lifttop" refrigerators, stating that 1,500 "liftops" had been rented in a six-weeks' period, and that 78% of these had gone into customers' homes using less than 35 kwh. per month.

A prime factor in the merchandising activity of any utility is in getting all company employees into the program, said Mr. Collier, and he related how a number of negro janitors were members of the Georgia Power Co.'s "100%" club. This "100% club" is composed of employees who have sold at least one appliance in every special activity put on by the company during the year.

"Getting employees into the program is a great morale builder, and it keeps them interested in the existence of the company," pointed out Mr. Collier.

Salesmen for the Georgia Power Co. are for the most part paid on salary-and-commission basis. The payment of salary, said Mr. Collier, is done to give the company more control over the methods employed by the salesman.

"We believe that one of our best moves was to provide a large staff of home economists—85 of them—to help spread the story of electrical living to Georgia housewives.

"New appliances aren't in a Georgian's home a week before a home economist pays a visit to show the new owner how to use it. And don't think those girls haven't more than paid their salaries in the sales they have turned up."

"Number of salesmen was increased so that we had one salesman for every 554 residential customers."

"You must realize," commented the gentleman from Georgia, "that selling down in our territory is a lot harder because for the most part the prospects are spread out over far greater territory than they are up here. There is not much chance of putting over the 'keeping up with the Joneses' selling theme when the 'next door neighbor' is six miles distant."

Mr. Collier described the current "Home Town" contest which the Georgia Power Co. is now conducting to stimulate appliance sales, and admitted that it might have some elements of novelty.

In this contest the 389 towns which the power company serves are divided into four groups (on the basis of kwh. consumption) and prizes are offered to the municipality in each group that shows the biggest increase

in kwh. consumption by the end of the contest period. The prizes which the towns receive must be used for civic improvement.

"One of the first happy returns we got from this program was the generous flow of newspaper publicity. The editorial space that they gave to the contest was more than the \$10,000 prize money could have bought in advertising."

"Practically all the cost of this promotion is in the prize money. No extra personnel was hired. We took a man off of employee promotion in each district to organize the contest."

"Civic organizations in the towns are doing most of the promotion for us. The town council of one southeastern Georgia municipality passed a resolution to the effect that the city would make the down payment on all electric water heater sales in the community. Within 30 days 40% of the potential market in that town was sold water heaters."

EH&FA financing is used in the Georgia Power Co. territory, and where a dealer is using this plan, the utility bills and bookkeeps the dealer's sales for him. Cost of doing this is included in the financing charge, and this amount for the bookkeeping cost is remitted to the utility by the EH&FA. The financing is on a recourse-to-the-dealer basis.

Freeman Explains Legislation Extending Rural Electrification Plan for 10 Years

Measures now awaiting final Congressional action will extend the Rural Electrification program of the government over a 10-year period with an appropriation of \$40,000 a year to carry on the program, according to statements made at the formal luncheon of the Edison Electric Institute sales conference by W. W. Freeman, vice president, Columbia Gas & Electric Corp., New York City.

The rural electrification program urged on the U. S. House of Representatives by a committee reporting a bill envisages the lending of such moneys, at low rates for 25 years, to public bodies, cooperatives, or private utilities to finance rural lines, house wiring, and the financing of appliance and equipment purchases. The bill provides that the REA will do its own financing of appliance sales, instead of the EH&FA.

The measure passed by the Senate makes such aid available only to public bodies or cooperatives.

No money is appropriated in the bills for the first year of this program, but Mr. Freeman pointed out that the REA can use the securities it took on loans already made to get more money from the Reconstruction Finance Corp. to put the program under way.

Expenditures for this extension of rural electrical service will be self-liquidating. Congressional committees have declared. But Mr. Freeman points out that they base their as-

sumption on average consumption by farmers receiving the service of 1,200 kwh. yearly, or 50% more power than private companies have been able to sell, on the average, to the farm user.

Money for the extension of electrical service, said Mr. Freeman, will be granted on the basis of a cost of no greater than \$1,000 per mile of lines serving four customers or less, with rates at 5.5 cents per kwh. with an average consumption of 100 kwh. per month.

Public agencies or private concerns borrowing money for such purposes must keep up the property and liquidate the loan, with interest, in 25 years, or have the property sold out from under them.

"It is not for me to say whether or not the plan will succeed," said Mr. Freeman, "although the records would seem to indicate that the chances are against it. If such a program can and does succeed, however, it will constitute a threat to private industry."

Roche Heads Dealership

MOBILE, Ala.—S. N. Roche, who has been in charge of Westinghouse sales in this city for the past several years, will manage the Roche Home Equipment Co., recently organized here to handle Westinghouse appliances.

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(Liquid Sulphur Dioxide)

This superior refrigerant—preferred by servicemen the country over—is stocked at so many convenient distribution points that prompt delivery is assured. The unvarying purity and dryness of Extra Dry Esotoo is the serviceman's guarantee of better performance. Extra Dry Esotoo assures a minimum of troubles and a maximum of profits.

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 Folder: V-METH-L (Virginia Methyl Chloride)
 Folder: Transferring from large to small cylinders
 Circular: Physical properties of various refrigerants
(Write name and address in margin)

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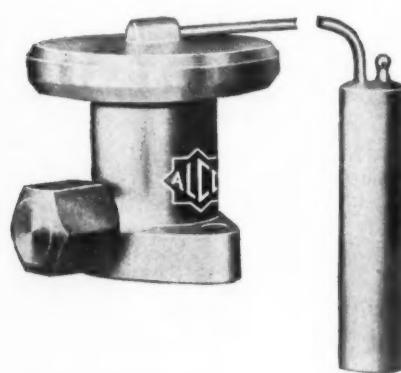
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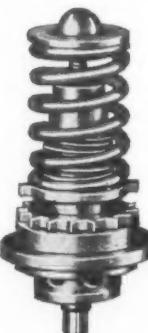
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Capacities from fractional tonnage to 19 tons Freon or 33 tons methyl chloride.
YET SIMPLE AS ABC—Only 3 major parts in each valve
All parts interchangeable in any one of the 6 types by removing only two cap screws.



THE POWER ASSEMBLY

With external remote bulb or several sizes and types of insert bulbs.
With choice of two different lengths of capillary tubing.
With either external or internal superheat adjustment.
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Sensitive and instantly responsive to the slightest superheat change.
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For either internal or external equalizing port.
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12 sizes of inlets and outlets.
6 sizes for solder connections.
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No working parts in the body.
May be placed in the line as a fitting, capped by a blank flange if not used, or fitted with valve cage or power assembly as required.

Built for the control you have a right to expect and guaranteed to do it.

For further details ask for bulletin 144D

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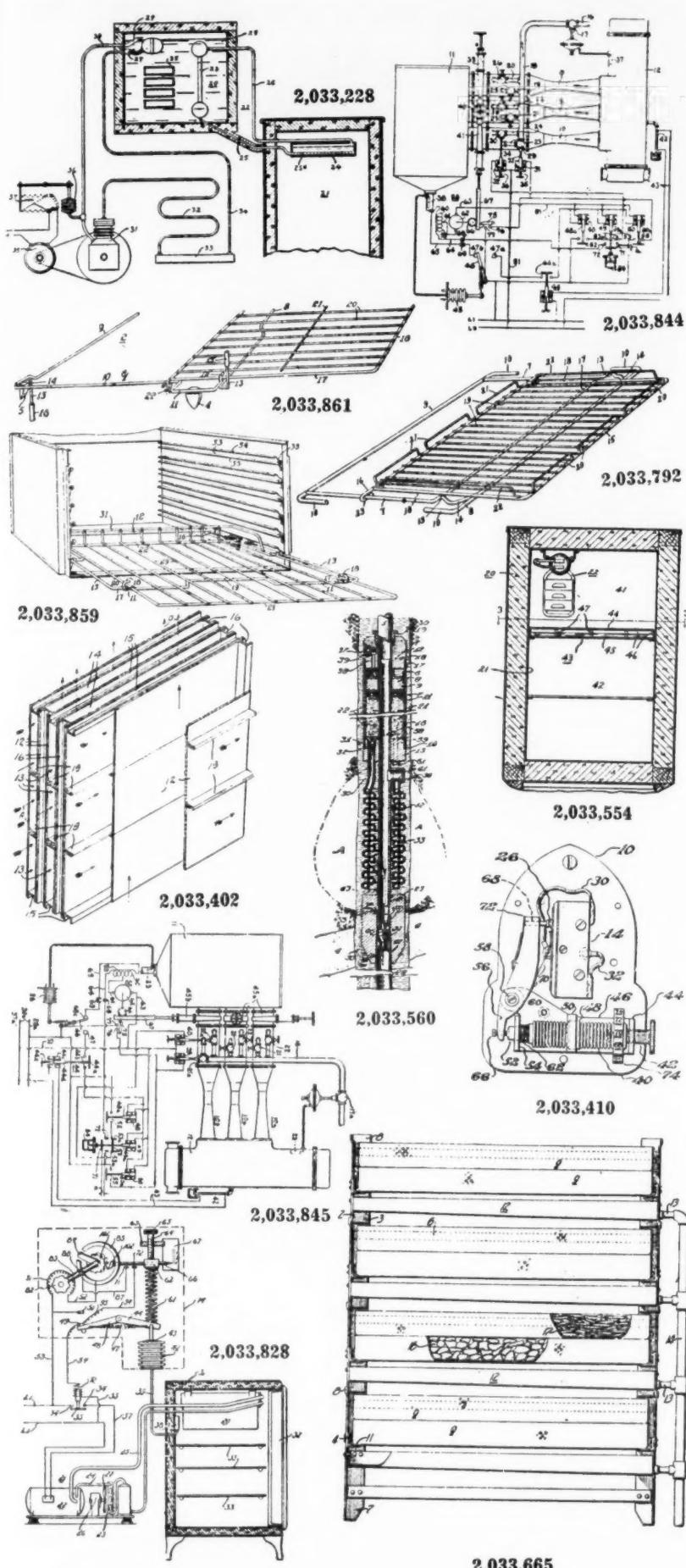
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Patents

Issued March 17, 1936

2,033,983. COUNTER COOLING MEANS. Harold A. Greenwald and George B. Palmer, Jr., Detroit, Mich., assignors, by mesne assignments, to Kelvinator Corp., Detroit, Mich. Application Jan. 20, 1930. Serial No. 422,171. Renewed Dec. 17, 1932. 6 Claims. (Cl. 62—102.)

2,034,030. REFRIGERATING APPARATUS. Richard S. Gaugler, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application April 20, 1934, Serial No. 721,516. 5 Claims. (Cl. 62—108.5)

2,034,053. TEMPERATURE CONTROL APPARATUS. Leigh F. Morgan, Springfield, Mass. Application Nov. 10, 1934, Serial No. 752,506. 1 Claim. (Cl. 236—92.)

2,034,069. PISTON COMPRESSOR HAVING ROTARY VALVE GEAR. Heinrich Walti, Winterthur-Wülflingen, Switzerland, assignor to the firm of Sulzer Frères Société Anonyme, Winterthur, Switzerland. Application Feb. 1, 1934, Serial No. 709,324. In Switzerland Feb. 9, 1933. 6 Claims. (Cl. 230—225.)

2,034,138. REFRIGERATING APPARATUS. Richard E. Gould, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corp. Application July 3, 1931, Serial No. 548,590. Renewed Dec. 30, 1932. 15 Claims. (Cl. 220—9.)

2,034,149. REFRIGERATION. Carl Georg Munters, Stockholm, Sweden, assignor to Platen-Munters Refrigerating System, Aktiebolag, Stockholm, Sweden. Application May 25, 1932, Serial No. 613,351. In Germany May 27, 1931. 9 Claims. (Cl. 62—126.)

2,034,153. COMPRESSOR UNLOADER. Clyde E. Ploeger, Evansville, Ind., assignor to Servel, Inc., New York, N. Y.

Application April 28, 1931, Serial No. 533,441. 16 Claims. (Cl. 230—23.)

2,034,213. PORTABLE ICE CREAM FREEZER. Ernest F. Smith, Greenwood, Nebr., assignor of one-third to H. W. McFadden and one-third to H. L. Reynolds, Maywood, Ill. Application Oct. 25, 1934, Serial No. 749,957. 6 Claims. (Cl. 62—114.)

2,034,300. MECHANICALLY COOLED DISPENSING APPARATUS. Herbert C. Kellogg, Detroit, Mich., assignor to Temp-Rite Products Corp. Application Aug. 28, 1931, Serial No. 559,865. Renewed July 2, 1934. 29 Claims. (Cl. 62—141.)

2,034,462. REFRIGERATING APPARATUS. Ivan L. de Jongh, Los Angeles, Calif., assignor, by mesne assignments, to General Motors Corp. Application April 20, 1927, Serial No. 185,243. Renewed July 3, 1935. 3 Claims. (Cl. 62—141.)

2,034,553. HEAT INTERCHANGER. Joseph Askin, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y. Application July 12, 1935, Serial No. 31,002. 3 Claims. (Cl. 257—246.)

2,034,620. REFRIGERATOR CONTROLLER. Lawrence C. Irwin, Brooklyn, N. Y. Application March 3, 1932, Serial No. 596,473. 12 Claims. (Cl. 62—4.)

19,889. ABSORPTION REFRIGERATING SYSTEM. Edmund Altenkirch, Neuhausen, near Berlin, Germany, assignor, by mesne assignments, to the Hoover Co., North Canton, Ohio. Original No. 1,887,957, dated Nov. 15, 1932, Serial No. 369,358, June 8, 1929. Application for reissue Sept. 28, 1934, Serial No. 745,929. In Germany June 16, 1928. 47 Claims. (Cl. 62—119.5.)

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. Van Deventer (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Harrison Elected to Head New Jersey Electric Leagues

EAST ORANGE, N. J.—Philip H. Harrison, General Electric distributor here, has been elected president of the New Jersey Council of Electrical Leagues, which represents 11 electrical associations in this state, and functions as a clearing house for cooperative promotions.

Besides Mr. Harrison, the following officers were elected: G. J. Redmond of Public Service Electric and Gas Co.; Hackensack, vice president; F. F. Horning of R.C.A. Victor Corp., Camden, treasurer; C. R. McCollum, Gladstone, N. J., dealer, secretary.

Elected to serve on the executive committee were H. P. Litchfield, Newark; J. H. McQueston, Camden; and M. L. Pusey, Trenton.

Contests & Shows Feature Allentown Promotion

ALLENTOWN, Pa.—Cake baking contests, fashion shows, vaudeville, and special radio broadcasts were a few of the attractions featured at a "kitchen style show" conducted by the Electric Refrigeration Bureau from March 23 to 28.

The Westinghouse display of "Electrical Magic" was also shown.

Dealers displaying refrigerators at the show included: F. Bowman & Son; Westinghouse Supply Co.; J. B. Liebman Co.; Hess Bros.; H. Leh & Co.; Pennsylvania Power & Light Co.; Coleman Electric Co.; Lehigh Valley Supply Co.; Eschelman Electric Co.; Electrical Devices Co.; Frank Geary; Sears, Roebuck & Co.; Benesch & Co.; Automatic Electric & Heater Co.



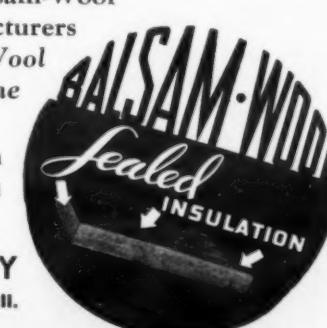
INVISIBLE BUILDER of Refrigerator Sales

The beautiful exterior of a refrigerator cabinet may attract the customer's attention . . . arouse his interest. But what's *inside* determines the customer's ultimate satisfaction and builds a solid, enduring foundation for future sales.

Unseen—hidden away within the refrigerator walls—Balsam-Wool Fiber Slabs are definitely helping refrigerator cabinet manufacturers to build business today. For proof we offer one fact: Balsam-Wool Fiber Slabs lead all other insulating materials in the volume used for domestic refrigerator insulation.

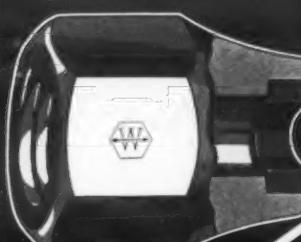
High in insulating efficiency—durable, non-settling, clean and economical to use—Balsam-Wool Fiber Slabs offer you exclusive advantages. It pays to use them.

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PRODUCT OF WEYERHAEUSER FOREST PRODUCTS

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- Durable rubber washer keeps out moisture.
- No split nuts—no collapsed tubes.
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Weatherhead
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Weatherhead manufactures a complete line of fittings and valves in both the S. A. E. and the Inverted types. Write for our new catalog.

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Air Conditioning

Boulware Urges Utility Men to Tell Public That Air Conditioning Is Here

By Phil B. Redeker

CHICAGO—Public utilities will be rendering a service of major importance to the air-conditioning industry if they will spread the word to business men and home owners that air conditioning is "here," that it is not a "thing of the future" but an accomplished benefit that awaits them now, Vice President and General Manager L. R. Boulware of Carrier Corp. declared in speaking before the Third Annual Edison Electric Institute Sales Conference here last week.

"Basis for your interest in promoting the sale of air conditioning is, of course, clearly in mind as a result of the load possibilities indicated in the report of your air-conditioning committee," Mr. Boulware began.

"The attractiveness of the load from summer air conditioning has been noted, but of growing attractiveness, from both a sales and a load standpoint, is the winter air-conditioning load. In the first place, it is an eight months' load instead of a four. In the home and smaller commercial application, where the broad market as to number and even as to horsepower is soon to be found, the connected load for winter conditioning is one-fifth to one-fourth of the summer cooling load for the same establishment.

"Then, as your committee's report has pointed out, the air-circulating apparatus will be run on through the summer, even though no cooling apparatus is installed, to give the comfort that comes from the evaporative effect of circulated air.

"Thus, in the small application, we can conservatively expect the winter conditioning installation to give 40%, and more in many cases, of the kwhr per year that would be represented by a summer installation in the same establishment. This ratio does not, of course, apply to the larger installations."

Accomplishments of appliance selling and load building in the home during the depression when the industrial load went down so sharply should have sold utilities on the desirability of domestic load-building

activities, said the speaker.

"Not only because of the increasing practicability of the small, self-contained, portable summer air-conditioning units, but—more importantly—because of the good apparatus and eager market now available for domestic winter air-conditioning sales, I believe the time is no longer in the future, but is now with us, when the home market should be approached and sold," declared Mr. Boulware.

"In selling air conditioning in the home and elsewhere, we have a new powerful ally to add to our previous comfort appeal—and that is health, for air conditioning is the great comforter of the hay fever victim in summer and one of the greatest known preventatives of the common cold in winter."

'Big Jobs' Need Plant Engineering

In discussing the problem of how air conditioning should be sold, Mr. Boulware thinks that large spectacular installations will continue to be sold by large national organizations who make a profession of engineering and installing the larger jobs.

"My own company is very anxious now, and will be for some time to come, to continue doing the complete engineering and installation job in connection with air-conditioning government buildings, ocean steamships, mines, department stores, large hotels, and office buildings, and other applications where the technical problems are such that they can not at the present time be successfully met, we still believe, by more than a few construction organizations, due to the rapidity of the advance in the art and the scarcity of really trained and competent engineers in the field," said Mr. Boulware.

"These applications are relatively few in number, however, and the sales approach to the market we want to consider here can be made through the properly manned and equipped local merchandising or construction organization working under the guidance of an experienced manufacturer. "Such a local merchandising and

construction organization needs to have competent engineers, competent construction facilities or connections, a really creative selling organization—even though it consists of only one man—and preferably should represent a manufacturer who is giving constant training in both engineering and selling.

"The broad market such selling is to reach has been pointed out in your report, and I know it is now ready for a vigorous, creative selling attack. The limiting factors are first, a sufficient number of men trained in air-conditioning sales-engineering, and second, a sufficiently well-organized body of information and history of experiences available to all.

"In our actual selling, once we have the trained personnel and the organized information, the procedure is relatively simple, and roughly the same as the creative solicitation programs that built the sewing machine, the cash register, domestic and small commercial refrigerators, the vacuum cleaner, the radio, and the washing machine.

"All these products above mentioned held plenty of hidden mystery, but they hit their stride in earnest, immediately upon their being put into the hands of the typical competent, well-trained, enthusiastic alert salesman or sales-engineer who went out after the business.

"If I should presume to comment on the failings of so fine an industry and one I have so lately entered, I would say that at the moment the greatest sin of commission in our marketing is the tendency to spend all our time fighting over the business that is coming to us, and ignoring the outer, less competitive fields where selling can be used.

"Our present tendencies lead only to such profit demoralization as we now have among both manufacturers and dealers, and a fruitless wasting of margins that should be spent on creating a much broader volume of business. This does not mean putting prices up, but going about one's own business, creating one's own prospects."

Why It Won't Be Cheaper

A frequent question, Mr. Boulware told the utility sales executives, is whether air conditioning is to be cheaper next year, or soon thereafter.

Factors which Mr. Boulware believes are going to prevent sensational lower prices and which will probably mean some increases, were outlined by him as follows:

1. There are a lot of inexperienced factors coming into the field now who are frankly buying their way in. No one can object to that, because that's one of the customary things in business, but the history of such things is that when they get in, their prices come in line with what experienced people have found necessary.

2. Volume does not hold out the

Air-Conditioning Orders for January, 1936 Valued at \$950,958 in Govt. Report

Data tabulated below is the first of a new series of monthly statistics on the value of orders booked for air-conditioning systems and equipment, and released through the office of Director William L. Austin, Bureau of the Census. Orders booked by 98 manufacturers are shown in this tabulation.

Item	Value of Orders Booked
Total	\$2,313,534
(A) Air Conditioning Group—Total	\$ 950,958
Unit Systems	
Self-contained (shipped substantially complete)	36,263
Not self-contained (shipped in sections), including refrigerating or cooling medium	215,420
Central-station Systems, excluding installation if installed—Human comfort (including refrigerating or cooling medium sold separately or otherwise for air conditioning) [1]	307,941
Industrial (including refrigerating or cooling medium sold separately or otherwise for air conditioning) [1]	78,706
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available	172,445
Air washers, including pumps and motors and control where furnished	39,357
Air filters (not including sales of filters used with machinery other than fans)—Continuous type	927
Unit type	16,707
Humidifiers	83,192
(B) Fan Group—Total	\$ 648,931
Fans, including bearings, pulleys, or couplings (if furnished)	88,308
For public and semi-public buildings	223,701
For general industrial uses	78,558
For mechanical draft	18,339
For jobber stocks and unknown uses	
Small housed and propeller fans—Direct connected small housed blowers with motors and control (merchandise motors)	104,708
Propeller fans, direct connected and belted (for ventilation only)	77,359
Driving mechanism for general fan use (not reported above)—Electric motors and controllers (manufactured or jobbed)	48,560
Steam engines (manufactured or jobbed)	3,577
Steam turbines (manufactured or jobbed)	5,821
(C) Unit Heater Group—Total	\$ 713,645
Industrial Type Unit Heaters, including heating element and motors where furnished—Equipped with blower-type (centrifugal) fans	82,810
Equipped with propeller-type fans	319,281
School-Room Type Unit Heaters, including heating element and motors and control where furnished	202,503
Indirect Heating Surface (not including unit heater surface)—Steel pipe coil type (manufactured or jobbed)	2,473
Cast-iron type (manufactured or jobbed)	11,176
Copper or aluminum type (manufactured or jobbed)	95,402

[1] Includes incidental equipment, such as temperature, motor, humidity, and electrical controls, dampers, outlets, etc. as are sold with each.

promise in this field it has in others, because of the ratio of manufactured products to hand work on the job.

3. There is no margin for selling now, practically all business done being that which comes to us.

4. Some sort of inflation is almost surely ahead of us, and even now our costs of material and labor are skyrocketing, not to mention all the extra delays, bookkeeping, and other overhead items occasioned by some influences that have heretofore been considered outside business.

"There are those who may feel that a creative selling program is not necessary in an industry in which everyone is academically interested and expecting great things," continued the Carrier vice president.

"Certainly no industry, save possibly the automobile, was ever so blessed as we are with a natural public interest in, and desire for, our product.

"But this does not necessarily mean sales, and we need to precipitate these interested people into purchases, through having advertising and salesmen interpret air conditioning to them in terms of what it will do for them in their particular shop or home—and then persuade them why they should have it now, showing how easy it is to own and pay for over a period of years."

Sales Points

For instance, the "comfort" idea can be interpreted to a commercial prospect through expanding it to encompass the following:

1. Draws trade
2. Holds and increases sales
3. Customers spend more time shopping
4. Increases unit sales
5. Enhances prestige
6. Builds public good will
7. Has advertising appeal
8. Attracts favorable comment
9. Discounts unfavorable location
10. Protects merchandise from spoilage
11. Reduces shop wear and soilage
12. Reduces mark-downs
13. Facilitates try-ons
14. Increases employee efficiency
15. Reduces absences
16. Reduces labor turnover
17. Reduces cleaning and decorating costs
18. Reduces distraction from outside noise
19. Increases efficiency of lighting system
20. Enables the boss to be comfortable and effective at work while his wife and family are in the mountains.

While the development of the market for air conditioning is largely a job for the manufacturers and the local trade, and while these elements will surely accept their responsibility, there is no question but that the cooperative spirit, such as the utility industry has shown in the pioneering and promotion of refrigerators and other load-building items, will greatly hasten the immediate realization of the air-conditioning market possibilities, Mr. Boulware stated.

He submitted a list of things which

WAGNER MOTORS for all types of air conditioners



.... they meet their requirements of performance and dependability

The preference for Wagner Motors for air conditioning has grown as rapidly as the knowledge of their dependability and excellent performance. No longer do modern air conditioner manufacturers overlook those important considerations in the selection of air conditioner motors that would help make their equipment give better, more dependable, more economical and more efficient service.

Progressive air conditioner manufacturers now consider these ten important requisites, which are fully provided for in the design and construction of Wagner Motors:

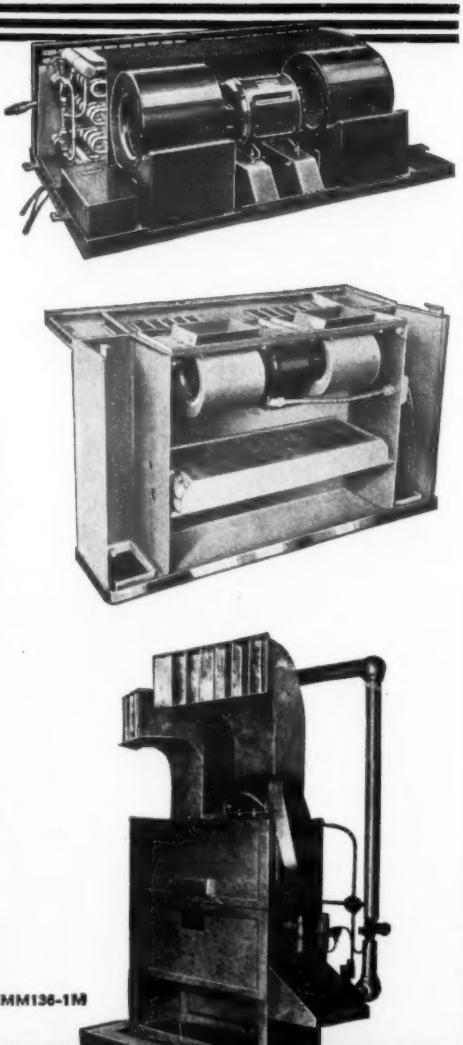
- 1 Cool Operation.
- 2 Minimum Servicing.
- 3 Minimum Vibration and Noise.
- 4 Good Appearance to Fit in With the Finest Surroundings.
- 5 Simplicity of Construction With Resultant Ease of Repair.
- 6 Maximum Economy Consistent With Dependable Performance.
- 7 Long-Lived Insulation.
- 8 Low Upkeep Costs.
- 9 Long Years of Reliable Operation.
- 10 Correctly Designed Starting and Operating Characteristics.

Years of experience are behind every Wagner motor. This, plus the widespread use of Wagner motors on all types of air conditioning systems—makes Wagner motors outstanding from a performance and permanence of operation viewpoint.

On your next air conditioning design or installation problem—consult Wagner. Wagner's experience will be helpful. Descriptive literature will be sent upon request.

Wagner Electric Corporation
6400 Plymouth Avenue, Saint Louis, U.S.A.

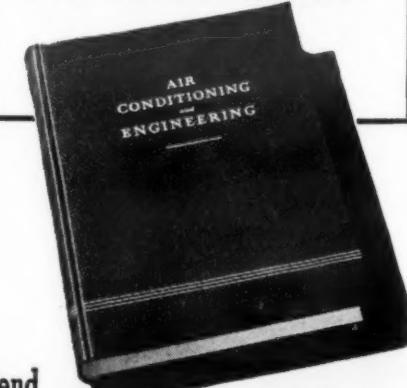
Motors Transformers Fans Brakes



MM138-1M

PREFERENCE FOR WAGNER MOTORS FOR AIR CONDITIONING EQUIPMENT IS STEADILY GROWING

WANT ALL THE FACTS on AIR CONDITIONING?



Send for this Valuable Engineering Book!

A complete reference book on air conditioning—692 pages of valuable data covering such important subjects as Air Flow, Sound, Control, Cooling, Heating, Ventilating, Dehumidifying, etc. Full of charts, tables, notes, references and technical information not available in any other single volume. Price \$5.00, postage prepaid.

C O U P O N —

American Blower Corp., 6000 Russell St., Detroit, Mich.

Enclosed find \$5.00. Send one copy "Air Conditioning and Engineering" prepaid to:

Name _____

Street _____

City and State _____

Michel Describes Air Conditioning Market To Utility Executives

CHICAGO—Comfort cooling has centered the attention of the public on air conditioning and is the opening wedge in the sale of year-round systems, it was stated in a paper "Our Air Conditioning Market" prepared by C. E. Michel, vice president, Union Electric Light & Power Co., St. Louis, and read by E. L. Berry of the same company at the Third Annual Sales Conference of the Institute held last week here.

While the major power load comes from cooling equipment, there is also a considerable load that may come from winter air conditioning, said Mr. Michel's paper. In St. Louis it is estimated that the ventilating and humidifying phases of air conditioning are needed about 1,500 hours out of the year.

For home systems the load from ventilating equipment is estimated on the basis of the use of a $\frac{1}{4}$ -hp. motor 1,200 hours during the year.

Retail stores have thus far constituted the greatest source of added load from air conditioning in St. Louis, according to Mr. Michel's paper. There were 15 cooling installations in St. Louis retail stores through 1933, 10 were made in 1934, and 25 in 1935. Most of these were of considerable size in terms of horsepower.

Market for the "comfort-cooling" group which in Mr. Michel's definition means homes and individual offices, is much larger in number, but thus far in St. Louis have constituted only 13% of the total load from air conditioning.

Majority of St. Louis residential installations have been in the range of from $\frac{1}{2}$ to 3 hp., according to data compiled by Mr. Michel.

In Mr. Michel's opinion, however, the "comfort-cooling" market is the one to attack, however, because it is a much easier market to sell. And such installations most generally lead into year-round installations.

The entire picture of the air-conditioning market is an amazing one, said Mr. Michel, because surveys would show that every commercial establishment and every home, no matter what the climate, should have air conditioning.

Utilities must help to lay the groundwork for rapid development of the market, said the St. Louis utility executive, by installing operating air-conditioning equipment on their own premises, and seeing that as many installations as possible are made as quickly as possible.

One of the principal—if not the principal—service that utilities can render is in gathering information that will enable the customer to know how many kilowatt hours his proposed system will use, how much water it will consume, and how many hours it will be in operation, said Mr. Michel.

Such information would sweep away many of the barriers to present-day sales, and would lead to a rapid development of the market, he declared. Mr. Michel stated that the Edison Electric Institute committee is actively collecting such data now.

71 Firms Will Exhibit at Oil Burner Show

(Concluded from Page 1, Column 4)

Products Co.; Bell & Gossett Co.; Bethlehem Foundry & Machine Co.

Century Electric Co.; Cleveland Steel Products Corp.; Detroit Fuel Oil Assn.; Detroit Lubricator Co.; Dongan Electric Co.; Electrol, Inc.; Excelco Products Corp.; Field Mfg. Co.; Fitzgibbons Boiler Co., Inc.; Fluid Meters Co.; Franklin Oil Heating, Inc.; Gar Wood Industries, Inc.; General Electric Co., A. C. Div.; Gilbert & Barker Mfg. Co.

Hoffman Specialty Co.; Hotstream Heater Co.; International Heater Co.; Jefferson Electric Co.; S. T. Johnson Co.; The Kent Co.; Keweenaw Boiler Corp.; Kleen Heet; H. C. Little Burner Co.; May Oil Burner Corp.; McDonnell & Miller; Mercoid Corp.; Minneapolis-Honeywell Regulator Co.; Monarch Mfg. Works; Morse, Lockhart & Morse, Inc.

Motor Wheel Corp.; L. J. Mueller Furnace Co.; National Radiator Corp.; Nu-Way Corp.; Oil Burner Builders, Inc.; Oil Burner Institute, Inc.; Oil Heat; Penn Electric Switch Co.; Perfect Controls Co.; Petroleum Heat & Power Co.; Preferred Utilities Mfg. Co.; Refractory & Engineering Corp.; Reif-Rexoil, Inc.

Scully Signal Co.; Socony Vacuum Oil Co.; Standard Oil Co.; Sundstrand Machine Tool Co.; Syncro-Flame Burner Corp.; Taco Heaters, Inc.; Timken Silent Automatic Co.; Titusville Iron Works Co.; H. A. Thrush & Co.; Tuthill Pump Co.; Viking Pump Co.; Waterfilm Boiler Co., Inc.; Wayne Oil Burner Corp.; Westinghouse Electric & Mfg. Co.; Webster Electric Co.; York Oil Burner Co., Inc.; Whitshall Electric Co.

Carrier Equipment Used in First Drug Store Air-Conditioning Installations Made in New Orleans

NEW ORLEANS—First of the New Orleans drug stores to take advantage of air conditioning as a business venture are two of the Katz and Besthoff chain of stores, both in the commercial area.

Carrier equipment with Freon as the cooling agent is being used for the two machines in each store.

Air will be taken in, filtered, and dehumidified before being sent through conduits at a rate which will give a complete change of air every three minutes.

The entire system is thermostatically controlled and will provide 80° temperature with 50% relative humidity. In the Canal and Dauphine Sts.

store where prescription departments and executive offices on the second floor will be air conditioned in addition to the main floor store, a 30-ton installation is being made. The Canal and Carondelet Sts. store, however, where only one floor is to be air conditioned, will have only a 20-ton installation.

To eliminate any obvious air ducts, both stores have been redecorated in a modernistic manner so that ducts may be blended with the architectural scheme.

Air Control Engineers are doing the work on plans drafted by Weil and Moses, a New Orleans engineering firm.

Fairbanks-Morse Adds Four New Models To Ortho-Clime Air-Conditioning Line

CHICAGO—Four new models of Ortho-Clime air-conditioning units have been added to Fairbanks, Morse & Co.'s line of equipment for the 1936 season, announces F. F. Stevenson, sales manager of the company's air-conditioning division.

Additions to the F-M line include a new floor unit, Model 612, for both cooling and heating. Modernistic in design and trim in appearance, the unit is applicable for use in either the home or the office, and may be had in a variety of finishes as well.

Capacity of the unit is one ton of cooling effect, using either water or Freon as refrigerant. Two new ceiling-suspended units, Models 715 and 736, are also available

in 1½-ton and 4-ton cooling capacity sizes.

These units were designed by T. B. R. Peters, chief engineer of F-M's air-conditioning division.

The fourth unit is a self-contained room cooler of about $\frac{1}{4}$ -ton cooling capacity, which requires no plumbing or pipe connections.

The design of this room cooler is new, and includes stainless steel trimming, giving a modernistic effect.

The company also announced that a new series of central units, both vertical and horizontal types, would be ready in the near future. These units will range up to 12 tons in cooling capacities, and are intended for both commercial and residential use.

Announcing New

HENRY DRYERS • STRAINERS

and LARGE VALVES

for FREON and METHYL CHLORIDE

COMPLETE RANGE OF SIZES AND TYPES. VALVES TO 6-INCH INCLUSIVE

DRYERS

Patents Pending

Complete range of fitting sizes for every requirement. Due to trade preference, Henry Dryers may be purchased, filled with activated alumina, anhydrous porous calcium chloride, calcium oxide, drierite or soda lime at same price. Flanged Dryers available either filled or unfilled.

TYPE 711 DEHYDRATOR

For Small Refrigerating Units

Drawn copper shell with single soldered joint. Shell: 2" O. D. by 2½" long. Dehydrator capacity: 6.3 cubic inches.

DEHYDRATOR with DISPERSION TUBE

Illustration shows 5½" length, single joint, 2" O. D., drawn copper shell. Longer lengths have soldered copper caps at both ends of shell. Dispersion tube connected to inlet end, exposes entire volume of dehydrator to penetration by refrigerant. Results in maximum drying efficiency. Has only 10% of pressure drop found in units of conventional design. Dehydrator capacity range: 13.5 cu. in. to 328 cu. in. Shell diameters: 2" O. D. to 4½" O. D. inc.

FLANGED SHELL DEHYDRATOR

With Dispersion Tube

Copper-plated steel flange construction for convenience in refilling. Patented distortion-proof flange makes tongue and groove recessed-gasket joint. Shell diameters: 2" and 2½". Dehydrator capacity: 13.5 cu. in. to 103 cu. in.

DEHYDRA-TECTOR

The Dryer with the Liquid Sight Port

Gas bubbles passing under sight glass indicate shortage of refrigerant. Flanged shell with dispersion tube.

SERVICE TOOLS

TUBE CUTTER

Friction reducing steel rollers in tube support. Ground edge cutting wheel. Easy-grip hand wheel. Replaceable reamer.

FLARING TOOL

Fast and sturdy. Our self-locating, adjustable cam-lever and clamping arrangement exerts maximum pressure opposite tube.

STRAINERS

Patents Pending

Available in a wide range of sizes and fitting sizes.

TYPE 890 SMALL STRAINER

Hemispherical screen has 50% more capacity than usual flat disc. Soldered copper shell. Has 120 mesh brass screen with No. 10 mesh brass screen as reinforcement.

TYPE 891 and 892 STRAINERS

Single-soldered joint, drawn-copper shell. Type 891 has shell 2" O. D. by 2½" long. Type 892 has shell 2½" O. D. by 5½" long. Furnished with 80 mesh screen for liquid lines and 50 mesh screen for suction lines.

TYPE 897 STRAINER

With Flanged Shell and Asbestos Sack

For use where exceptional degree of filtering is required. Easily cleaned because of flanged inlet. Distortion-proof, patented, copper plated, forged steel flange makes tongue and groove recessed-gasket joint. Single soldered joint on drawn copper shell. Asbestos sack is supported inside 80 mesh screen cylinder. Shell 2" O. D. by 5½" long. Flanged shell strain without asbestos sacks are also available.

TYPE 896 STRAINER

With asbestos sack

Has single soldered joint, drawn-copper shell. Shell: 2" O. D. by 5½" long.

TYPE 895 Y STRAINER

For Copper Pipe

Negligible pressure drop. Screen can be taken out for cleaning without removing strainer from line. Very large screen area. Light weight. Baffle construction prevents heavy particles injuring screen. Furnished with 80 mesh screen for liquid lines; 50 mesh screen for suction lines. Sizes: ½" to 2" O. D.

RELIEF VALVES

TYPE 612 CAPPED PRESSURE RELIEF VALVE

Patents Pending

For Freon and methyl chloride. Adjustable relief point indicator. Accurate release at predetermined relief point.

TYPE 614 PRESSURE RELIEF AND BLOW-OFF VALVE

Patents Pending

Hand emergency blow-off feature. Otherwise similar in construction to Type 612.

IF YOUR JOBBER CAN'T SUPPLY YOU, WRITE DIRECT

HENRY VALVE CO.

1003-17 North Spaulding Avenue

CHICAGO • ILLINOIS

Service Methods

Method of Building Apparatus For Testing Thermostats

By D. Roland Vanneman, Consulting Engineer

AN accurate and inexpensive thermostat testing outfit, that does not require any controls to maintain proper brine temperatures, may easily be set up in any refrigeration service shop. Every shop should equip itself with some sort of an outfit to check up thermostat settings, on both new and repaired thermostats.

The illustration shows the hookup of this circuit, which uses one refrigeration unit to cool two brine baths, which are maintained at different temperatures. This unit should be of not larger than $\frac{1}{2}$ hp., and be charged with methyl chloride or Freon, as these higher pressure refrigerants give a more accurate control of the expansion valve settings.

The cooling coils can be made from an old condenser, and should consist of three or four finned tubes in each coil. The tanks should be about one inch longer than the coils, about three inches wide, and five to six inches deep. The cooling coils should be supported in a vertical position on one side of the tank, taking up about one inch of the width and leaving the other two inches for immersion of the thermostat bulbs.

By referring to the sketch, there are two expansion valves (C) and (D), and these are connected in series with coils (E) and (F). An additional coil (J) is required as a dryer coil. This is located in front of the condenser, so that a supply of warm air is always blowing through the coil.

Tanks Insulated

The tanks should be insulated and filled to within an inch of the top with a brine mixture of Prestone and water.

In order to maintain an agitation of the brine, a supply of air from a small obsolete compressor or some other air line can be controlled by use of air needle valves. Without a good agitation there is likely to be a variation in temperature of the brine, which is not desirable.

In operation, the liquid refrigerant passes into the first coil through ex-

pansion valve (C), which is set for the pressure that corresponds to the refrigerant temperature required. (See pressure temperature charts on the refrigerant used.) As the refrigerant passes through this coil some gas is formed from evaporation of part of the refrigerant. This gas and the refrigerant not evaporated then pass into the second coil (F) through the expansion valve (D), which is set for a lower pressure, this pressure being that corresponding to the temperature required.

Dryer Coil Finishes Evaporation

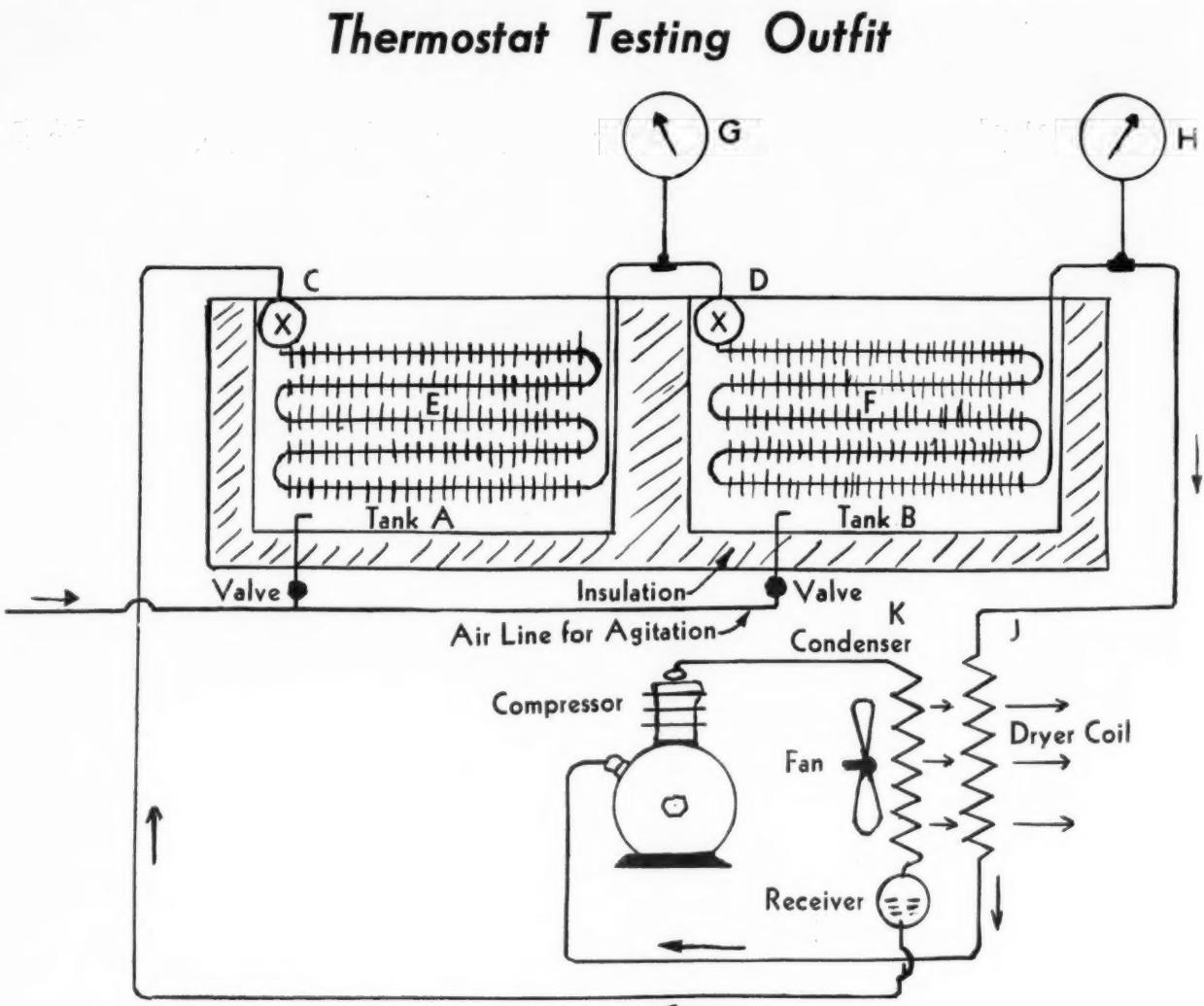
In this second coil, more of the refrigerant is evaporated and the balance of the refrigerant not evaporated with all of the gas is then passed through the dryer coil (J), where the balance of the refrigerant is evaporated.

It would not be advisable to eliminate this dryer coil, as there would be too much liquid refrigerant returned to the crankcase by the compressor, causing the oil to foam and pump out of the crankcase. By use of the dryer coil, only dry gas is returned to the compressor.

When the system is in operation the gauges (G) and (H) give the indication of the expansion valve settings. With proper agitation, there is less than $\frac{1}{2}^{\circ}$ difference between the refrigerant and the brine, and this is more than sufficient for most accuracy required. By use of hand thermometers the exact temperature required can be obtained, by raising the expansion valve settings for higher temperatures and vice-versa for lower temperatures. It is also possible to paste white paper discs over the dials of the gauges, and make the scale read direct in temperatures by running a few tests to determine the needle position for each temperature desired.

Pressure Drop Necessary

It is also necessary to bear in mind that coil (E) must operate at a higher temperature than coil (F), since there must be a pressure drop from the first coil to the second coil.



The above sketch shows the apparatus for testing thermostats in the service man's shop as outlined by Mr. Vanneman in the accompanying article. Parts are: A and B, tanks; C and D, expansion valves; E and F, coils; G and H, gauges; J, dryer coil.

About an hour's operation of the system is needed to cool the brine down to a stable temperature, and, since it is possible to easily adjust the expansion valves to the temperatures required, there is little delay in starting up the system for making any tests required.

The system should be completely dehydrated before starting up, so that no moisture interferes with the expansion valve settings. It is not difficult to find a methyl chloride compressor that will operate sufficiently for the small load required. Any motor and condenser can then be pressed into service for the balance of the high side required. The tanks are the major part of the equipment that must be purchased.

It is customary to test thermostats by placing the bulbs in the coldest tank first. Brine temperature should be the same as of the cut-out setting of the thermostat in the normal position.

Turning the cold control from a colder position to the normal position should cause the thermostat to cut or snap out. If it does not, remove the dial and turn the spindle to a warmer position until it does snap out.

If the thermostat is otherwise in good order, and has not lost part or all of its charge, this would be the correct normal position. Then place the bulb in the warmer tank, where the brine should be the temperature for cut-in, on the normal position. Turning the dial from a warmer position to the normal position should cause the thermostat to cut in. If it does not, change the differential adjustment if this is not soldered into a fixed position.

Marsh Markets Universal Socket Thermometer In Two Types

CHICAGO—Jas. P. Marsh Corp., manufacturer of indicating and recording instruments, has recently put on the market the Marsh Universal Socket Dial Thermometer, in both the self-contained and distant-reading type.

The Type 61 self-contained instrument, fitted with the universal socket, may be used as a vertical connection thermometer, a 90° back angle thermometer, a front angle thermometer, or any intermediate angle. It eliminates the requirement of specifying a specific type of stem for each particular application, permitting the user to apply it to practically any installation.

The Type 62 distant-reading thermometer is equipped with 6 feet of connecting tubing and a union bulb, or, in the case of high temperature thermometers, either a union or a flexible plain bulb. The thermometer has a mounting flange, together with the universal socket, which permits installation of the instrument proper at any convenient point on top or in front of the apparatus, or on a wall or pillar, after which the bulb is installed at point of temperature.

A complete assortment of temperature range, from -20° to 800° above zero, in both Fahrenheit and Centigrade scales, is available.

three months after the sale and again eight or nine months after the sale.

"Many prospects' names have been secured in this way," Mr. Epstein explained, "for out of all the calls we make, only about 3% are actually for work on refrigerators."

Wholesale Radio Service Issues Parts Catalog

NEW YORK CITY—Wholesale Radio Service Co., Inc. has just issued a 64-page catalog listing a line of refrigerators and replacement parts, radio receivers, public address amplifiers and systems, radio replacement parts, and electrical appliances.



RANCO Was the FIRST

—to provide a dial plate covering the front of the thermostat to indicate the temperature dial positions and the position of the "on and off" switch.

Ranco engineers foresaw the need of a precision control unit that would be not only durable and dependable but sightly and convenient as well.

Ranco pioneered the production of thermostats specifically designed for domestic refrigerator service. And from the first, practically every worth-while improvement has been a RANCO development.

Consistent leadership! You'll find full proof in EVERY Ranco-stat in today's complete line of replacement units.

Write for KR Bulletin.

THE AUTOMATIC RECLOSED CIRCUIT BREAKER CO., Columbus, Ohio

RANCOSTAT

Good-Will Calls Help Apollo Build Up Service Work

NEWARK—Good-will calls amounting to approximately 97% of its total calls help the Apollo Distributing Corp., Newark Crosley distributor, maintain its slogan, "Apollo For Service," declares Harry Epstein, service manager.

"Responsible service men, located strategically throughout the territory, are properly trained and provided with the names of customers to call on," Mr. Epstein said.

"Every refrigerator customer is called on some time within the first

EVERYTHING from ONE source

Your jobber of Perfection Certified Parts is prepared to render a very definite service. You can procure ALL your replacement parts and supplies through him, for he is the type that not only carries a stock of Perfection Certified Replacement Parts, but also everything else you may need to service any and all makes of refrigerators.

Many parts that have not previously been available for replacement or service needs from any independent source are made by Perfection. No premium is asked for these parts, yet they are manufactured of the finest materials, accurately machined and finished to insure easy installation, perfect fit and quiet operation. Special attention is called to the fact that Perfection Products are not limited to a few fast moving numbers for one brand of refrigerator, but include a comprehensive line of compressor replacement parts for Copeland, Frigidaire, Kelvinator, Servel, Universal, Zerozone and others.

Order through the nearest Perfection jobber. If you do not know his name, please write us and we will gladly furnish complete information.

PERFECTION REFRIGERATION PARTS CO.

(A division of Perfection Gear Co. Est. 1919)

HARVEY, ILLINOIS

PERFECTION Certified Replacement Parts for popular makes of refrigeration units



Reducing Flare Nut Makes Installation Work More Flexible

By H. H. Lamar, Engineer,
Refrigeration Valves Division of
Kerotest Mfg. Co.

Of all the editorials that have appeared from time to time in different trade papers on hints, short cuts, money and time saving ways for service men, nothing has ever been mentioned on one of the greatest time, labor, and money savers in the service man's kit—the reducing flare nut.

Since the reducing flare nut has not enjoyed the publicity that has been given to some of the other tubing accessories, very few service men really know how to take full advantage of its adaptation and flexibility in the refrigeration field. The saving alone over the old way of making reduced flare connections, amounts to 60% of the cost of an old style reducing flare fitting, not to mention the extra joint required with its consequent additional leaking hazard, and the bulky appearance after the connections are completed.

Purpose

The main purpose of the reducing flare nut is, first, flexibility, which means it will reduce any stock item valve or fitting to the size required. This advantage alone should appeal to the service man, because he will save himself time and money in getting the special fittings very often required on different installations.

Second, the reducing flare nut reduces inventory and increases shelf space in the service shop, since only a minimum of different size standard valves and fittings are required.

Third, this small accessory saves time and money to the service man and customer because a few standard valves and fittings and an assortment of reducing flare nuts will service any installation with a minimum loss of time.

Commercial Installations

On larger commercial installations where manifolds are used, it is often desirable from the standpoint of saving copper tubing and large size valves and fittings, to have different sizes of flare connections on the manifold valves.

Because this type manifold cannot be stocked or bought at random, special manifolds have to be made up to suit the installation, or reducers added to complete the job. With reducing flare nuts, a manifold large enough to take care of the largest flare can be made to suit the rest of the installation, regardless of its flare sizes.

Reduces Stock Needs

It can readily be seen that with a complete set of reducing flare nuts, the number of different sizes of valves, fittings, and manifolds can be reduced to about half of what ordinarily would have to be carried on the shelves of the average service shop.

Besides the advantages listed in the foregoing paragraphs, it may be of interest to service men to note that by using a reducing flare nut in place of the regular flare reducer, he also eliminates one extra joint. This additional connection cannot be eliminated by the regular flare reducer since this type reducer requires two joints against one joint on the reducing flare nut.

Since every additional joint on the system means an additional leaking hazard, the service man as a rule tries to eliminate as many connections as possible.

Making Oversize Flares

The proper way to make flares on tubing for reducing flare nuts is as follows:

Any ordinary flaring tool can be used for this purpose. The only difference between making a regular flare and the oversize flare is to remember to extend the copper tubing from 1/16 in. to 3/32 in. beyond the edge of the flaring block, for each size larger than the regular tubing size.

Flares of one size larger than the regular flare can easily be made in one operation. For still larger size flares this should be done by extending the tubing in steps of 1/16 in. for each operation, until the proper size flare is attained. This must be done in order to prevent the flare from twisting or buckling the copper tubing.

Table of Available Sizes

The following table will show the available reduced flare nuts:

Flare Size	Reduced Tube Size
1/4"	.3/16"
5/16"	.1/4"
3/8"	.1/4"
7/16"	.3/8"
1/2"	.1/4"
1/2"	.3/8"
1/2"	.7/16"
5/8"	.1/2"
3/4"	.5/8"

Letters from Service Men

Service School

483 Seventh Ave.
Salt Lake City
March 18, 1936.

Gentlemen:

Have read your paper for a long time and like the way it prints facts. Can you give me the name of some good refrigeration and air conditioning school where I could get a good training. I don't care so much about the cost as I do results.

May I have an expression of your views as to the future of a man well trained in this field. KEITH HOLBROOK.

Answer: See advertisements of schools in this issue. As to the future for a man well trained in refrigeration and air conditioning, we sincerely believe that the opportunities are as good or better than any other field. We are betting our own time and money in that belief.

Helpful Service Manual

Rex Cole, Inc.
25-11 Hunters Point Ave.
Long Island City, N. Y.
March 2, 1936.

I recently acquired a copy of your 1936 MASTER SERVICE MANUAL and was quite impressed with its helpfulness. The thought occurred to me that some of the service men employed by this organization would also find some very valuable and instructive information in this book. In addition, I believe it would be beneficial to them to know something of the various functions of the many varieties of electric refrigerating systems, and this MANUAL is just the book that can give this knowledge to them.

I desire to know if there would be any discount allowed on the purchase of approximately two dozen of these MANUALS. I know my service men would appreciate any consideration shown them if my efforts succeeded in getting this book for them at a reduced rate.

Thanking you for your attention, and hoping to have the pleasure of an early reply, I remain,

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A Credit to the Industry

O. J. Perry
Parts and Repairing, Electrical Products, Motors, Refrigeration 454 Agnes St., Newport, Ore.
Feb. 27, 1936.

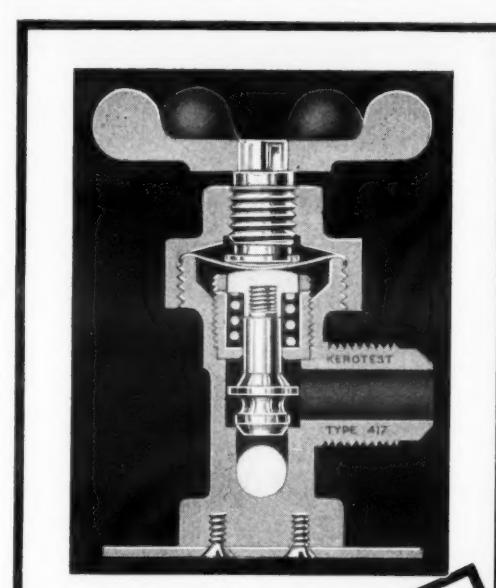
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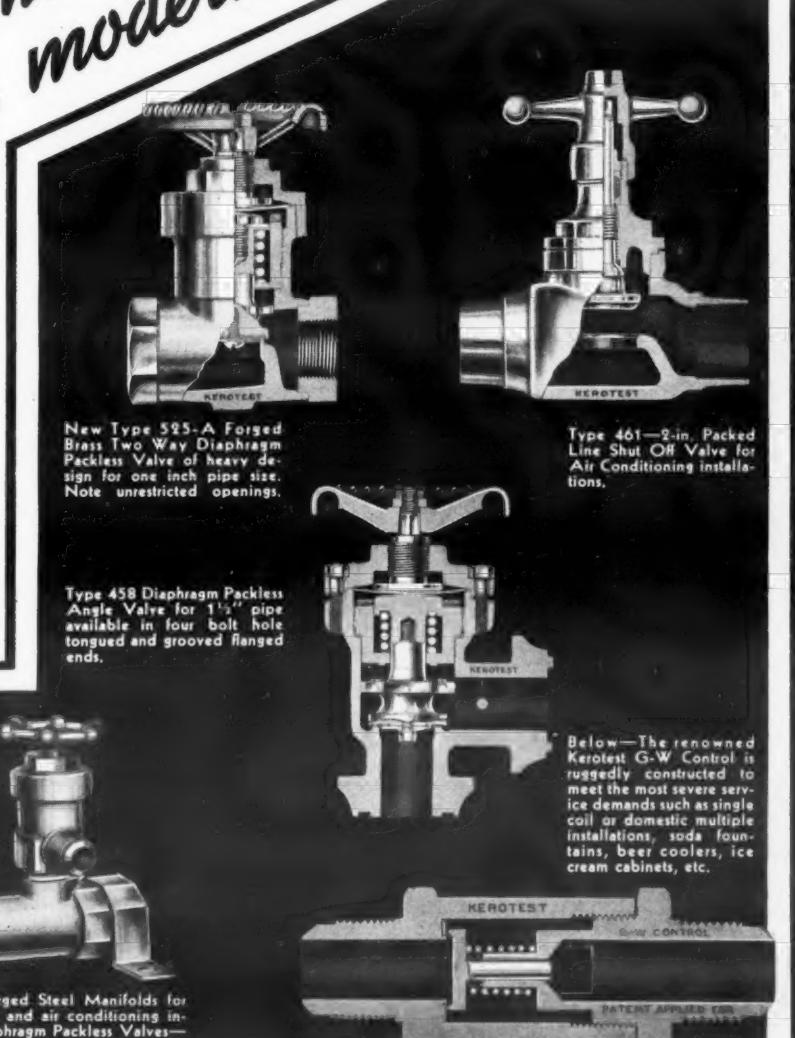
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The Refrigeration Engineer's Manual

By S. L. Potts

Evaporators and Refrigerant Controls Discussed

Chapter 7—Evaporators

Kind of Systems

The evaporator is sometimes known as expansion coils, other times known as the cooling coils, or the boiler. The function of the evaporator is to gather the heat from the refrigerator box and its contents or from the warm brine returning from the refrigerator box. There are two cooling systems in general use.

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Direct expansion system is where the refrigerating medium is evaporated, or the pressure is lowered in the cooling coils which are located in the refrigerated space and gather the heat directly from the material to be cooled. No intermediate means is used to gather the heat. With some refrigerants, such as ammonia, which has such a great affinity for water, a leak into the refrigerated space would make the stored materials, such as milk, meat, and many other food products, unfit for use.

Indirect expansion system is used where the refrigerating medium is evaporated, or the pressure lowered in some intermediate vessel or container, such as a brine tank or brine cooler, and it cools the brine. This cold brine is then circulated by pumps or other means into the refrigerated spaces or ice box. The brine gathers the heat and returns to the brine cooler where the heat gathered is given up to the refrigerant. A leak of brine will not cause any destruction of the food products unless brought into direct contact with them. The indirect system of refrigeration is used in most food storage ware-

side the expansion coils and the temperature maintained in the refrigerator. This difference of temperature may be anything from 3 to 15° F. The average is about 10° which gives a good rate of heat flow from the air in the refrigerator to the ammonia inside the coils. In order to maintain a temperature of 20° F. in box, the ammonia must be kept at 10° F. which requires a suction pressure of 23.8 lbs. gauge.

Types of Controls

In the indirect system the same allowance of 10° between the air in refrigerator and the brine in the cooling coils must be allowed. Then 10° must be allowed between the brine in the brine cooler and the ammonia in the expansion coils. The ammonia will then be at 0° F. and require a suction pressure of 15.7 lbs. gauge. The lower the suction pressure, the larger the volume of gas required for one ton of refrigeration, and the larger the volume of gas the greater the horsepower required.

There are two systems of evaporation used in evaporators by which heat is gathered to evaporate the refrigerant.

1. **Expansion valve control**—hand or mechanically operated.

2. **Flooded or float valve control**.

The expansion valve control may be operated by hand to give the right amount of liquid refrigerant to perform the work required to be done. The operator must use good judgment and be on the watch for changes of load. A decrease in load requires that the expansion valve be closed to suit the change in load. If a change in valve setting does not take place, liquid refrigerant will be returned to the compressor causing trouble there. The expansion valve control may be operated by the suction pressure acting on a diaphragm operated expansion valve. It may be operated by expansion and contraction due to temperature changes on a volatile gas. This change is made to operate the

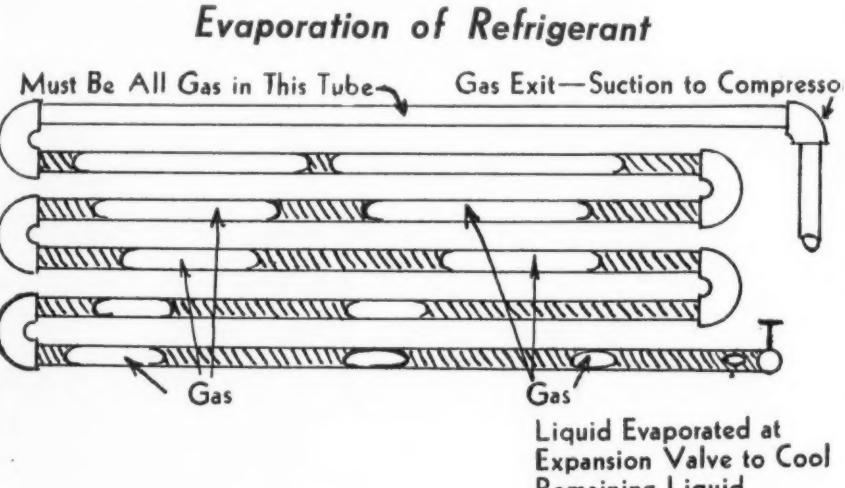


Fig. 56—The diagram shows how the liquid refrigerant evaporates as it proceeds through the coils. For efficient operation, the refrigerant must be entirely gas when it reaches the top tubes.

houses, and in most other refrigerating service for food products where ammonia is used as the refrigerant. Carbon dioxide and sulphur dioxide are most frequently used in direct expansion systems because no serious damage results from leakage. Carbon dioxide gas is said to be of advantage in storage of some food products. The direct expansion system is operated at greater efficiency because there are always some losses when heat is transferred from one medium to another. The purchase cost of the direct expansion system is considerably less, because the brine tank, cooler, and all pumps and much piping can be done away with. The horsepower required per ton of refrigeration by the direct expansion system is less than that required for the indirect system. This can be explained as follows.

In the direct system of expansion, an allowance must be made between the temperature of the ammonia in

expansion valve. Considerable progress has been made in improving the mechanically operated expansion valve but considerable trouble is experienced in making it take care of all the variable conditions met with in service.

Flooded or float valve control is the system in which all the evaporator or most of it is flooded with liquid refrigerant. In the case of the shell and tube evaporator, this is easy to accomplish. With a coil evaporator, many difficulties are met. One great difficulty is surging or the rushing of the refrigerant through the coil caused by the gases rising in the coils and carrying the liquid along with it. This causes the liquid level to rise and frequently carries liquid over to the suction line of the compressor. This liquid is wasted as far as doing effective work is concerned and will cause trouble in the compressor if the (Concluded on Page 19, Column 1)

Expansion Valve

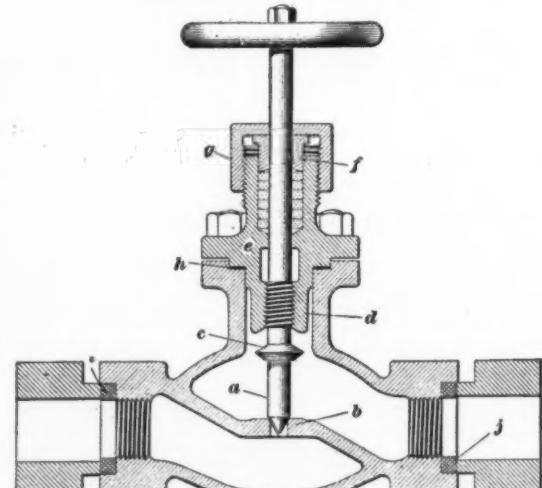


Fig. 57—Cross-section view of an expansion valve. This control may be manually operated to regulate refrigerant flow.

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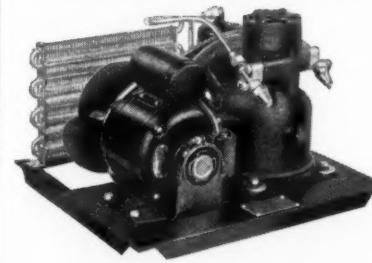
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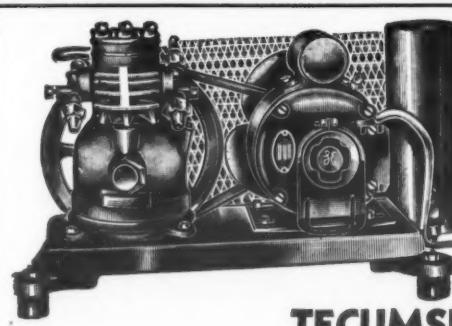


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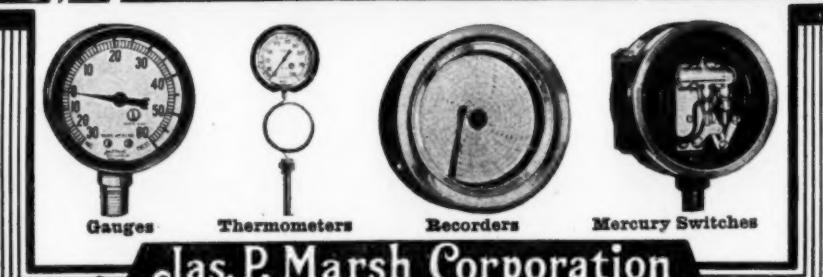
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Evaporating Coils Installed on Ceiling

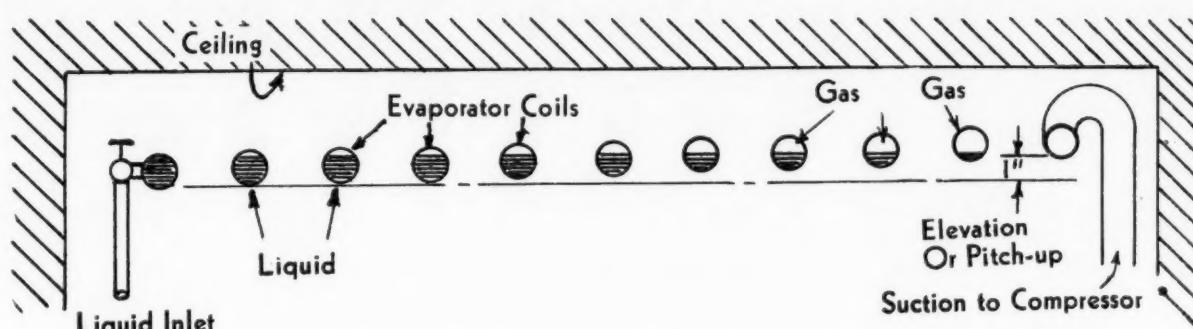


Fig. 61—Diagram shows how, in a horizontal coil evaporator installed on the ceiling, liquid refrigerant is confined to the bottom of each pipe.

Description of Coil Evaporators and Their Operation

(Concluded from Page 18, Column 3) amount is large. To overcome this trouble, the liquid level must be kept low. Then the effectiveness of the evaporator is materially reduced and the gases generated become superheated which reduces the compressor efficiency. Coil evaporators are very common and very desirable for many cooling processes especially where air is cooled and circulated.

Evaporator Shape

Form or shape of evaporators. They can be built in the form of:

1. **Coil evaporators,** horizontal or vertical.

2. **Shell and tube evaporators,** horizontal or vertical.

Coil evaporators consist of a number of lengths of pipe arranged with return bends and may be placed on side-walls or on the ceiling of a room. The main idea of the coil is to have it set so that a free circulation of air over the coil can be obtained. If the coil evaporator is hung on the side wall in a vertical position the expansion valve admits liquid refrigerant to the lowest coil.

As soon as the liquid passes the

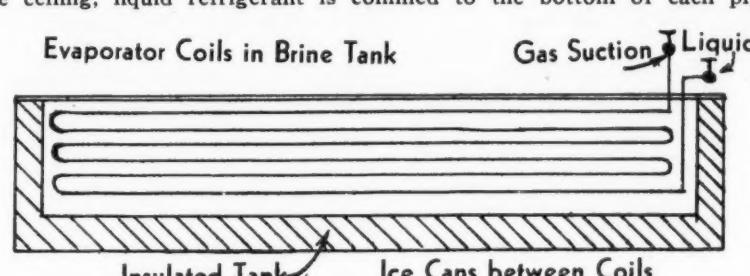


Fig. 60—Evaporating coils used in an indirect ice-freezing system.

expansion valve, some of the refrigerant is evaporated to produce the cooling of the remainder of the liquid from receiver temperature to the evaporator temperature with the result that some gas is generated at the expansion valve. This gas rises in the coil to escape and in doing so raises the liquid in the coils above. As more heat is absorbed by the refrigerant, and more gas generated, the volume increases and the liquid level rises until the accumulated gas makes a rush through the coils to escape to the compressor suction line with a possibility of carrying some liquid ahead of the escaping gas.

In order to operate this coil correctly, all the liquid must be 100 per cent evaporated by the time it reaches the top pipe in evaporator. Nothing but gas should pass out of top coil to the compressor. It can be seen that

with a variable load on the evaporator this condition would be difficult, if not impossible, to maintain. At one time the liquid will pass over, and the next time the liquid level will drop 3 or 4 or possibly more pipes, materially reducing the effectiveness of the evaporator. The period of time over which the gases will collect in the coils before the surge takes place is variable. The surge does not occur at regular periods even for a constant load.

By placing baffles in front of the wall coils as shown in Fig. 58, the rate of air circulation is increased. Care must be taken to give the air enough space to pass over the coils without too much loss. This method produces uniform temperatures in the room.

To hang the expansion coils on the ceiling gives much better results. The cold coil is in the warmest air in the room. As the air becomes cooled it falls to floor along walls, as shown in Fig. 58.

The liquid is fed into one end of this coil in the same manner as in the vertical coil, but instead of entirely filling lower pipes as in the vertical coil, liquid occupies the lower portion of every pipe as shown in Fig. 61.

This permits the gas to travel through the upper portion of each pipe and greatly decreases the chance of surges of liquid. Each pipe contains liquid which causes the inner surface to be wet and increases rate of heat transfer through pipe walls.

Great care must be exercised to keep these pipes level and free from pockets and traps. A slight elevation of pipes towards the suction outlet gives some added advantages. The lowest pipe carries liquid nearly filling pipe because not much gas has accumulated. As the liquid nears the suction outlet it becomes less or disappears entirely and the gas volume increases rapidly. A liquid trap should be made at the suction outlet to prevent liquid passing over to compressor. The elevation given a coil should be slightly less than the diameter of the pipe used in the coil.

In Fig. 59 is shown the evaporating coils arranged in a bunker next to the ceiling. This gives uniform temperatures inside room and the bunkers can be made waterproof to catch any drainage from coils while defrosting. This will permit all the floor space to be used without permitting any drip to spoil any merchandise set under coils if defrosting should take place. This method is used in meat boxes.

In Fig. 60 is shown the evaporating coils used in an ice freezing tank. This is the indirect system. The heat is absorbed by the brine in the tank and delivered to the evaporating coils placed in the tank between the cans. Any leakage of ammonia that takes place is absorbed by the brine and not by the ice.

Ceiling Installation

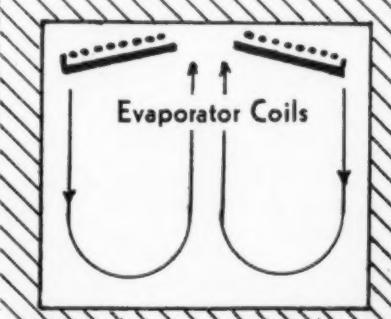


Fig. 59—Evaporating coils installed on the ceiling give best results. Warm air rises, is cooled, and sinks down along the walls.

Gibson Sales Gain 50% Over February, 1935

GREENVILLE, Mich.—Sales of Gibson refrigerators for the month of February were 50% ahead of February, 1935, reports L. E. Taufenbach, sales manager of Gibson Electric Refrigerator Corp.

Unfilled orders are double those of last year at this time, and many departments at the factories here are running 24 hours a day, Mr. Taufenbach says. All departments at Gibson's Belding, Mich., factory have been opened and are running on a 24-hour schedule, he adds.

Crosley Distributorship In Chicago Expands Quarters

CHICAGO—For the third time in 24 months, Crosley Distributing Corp., 160 East Illinois St. here, is expanding its quarters to provide increased display and office space, reports C. S. Tay, manager.

Growth in sales and increased activities in all of the company's departments have necessitated the expansion which will provide approximately twice as much display space as that previously in use.

Ammons Represents Crosley In Carolinas & Virginia

CINCINNATI—John C. Ammons of Atlanta has been appointed district manager for Crosley Radio Corp. in the Carolinas and Virginia with a section of Kentucky and Tennessee.

Mr. Ammons has been connected with the refrigeration and radio industry since 1925, and for the past two years has been Crosley Georgia representative.

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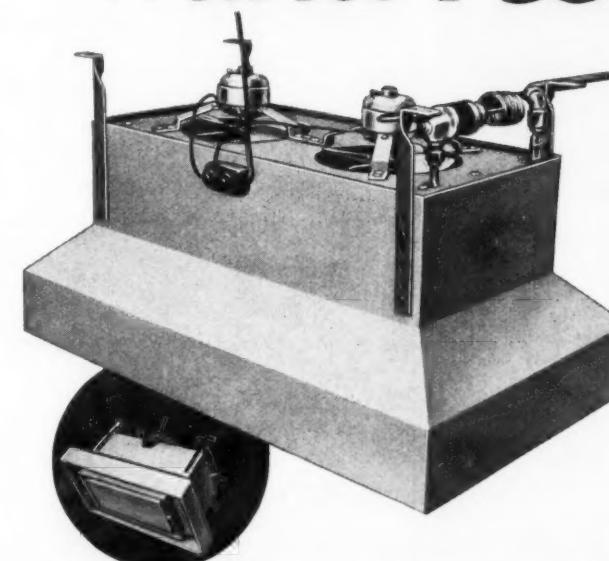
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